

W29 6 spindle semi-automatic nut tapper. Capacity from  $\frac{3}{4}$  to  $1\frac{1}{2}$  in., square or hexagon nuts. Equipped with pump and set of taps. Motor driven.

W30 Geared slotting machine. 36 in. circular table. Motor driven.

W31 Universal power hack saw. Capacity up to 6 in. round bars. Quick return and automatic lifting device. Circulating pump.

W32 Improved triple valve testing machine.

W33 Air hose press machine.

W34 Hose clamping machine.

W35 Tire heater. Capacity up to 36 in. tires.

W36 Tire plate.

W37 Car axle grinding machine. Especially designed for grinding new car axles to standard specifications, and for the repairing of standard car axles. Weight about 23,000 lbs. Motor driven. This machine has not been definitely decided on as yet, owing largely to its cost. All of the foregoing list of machinery is on order, the contracts having been signed some time ago.

A standard gauge track runs the length of the shop, connecting through the front of the shop with the southerly track into the freight car shop, across the midway, over

extension by the addition of a third unit to each group.

The Forge Shop is 100 by 260 ft., of the usual concrete subwall, brick upper wall, and spanned by steel trusses at 20 ft. centres. It is centrally situated on the east side of the midway between the locomotive and car departments, the locomotive department occupying the greater portion, as reference to the previous article on that department will show. The car department equipment is contained in the north side of the building, principally toward the west end. The 100 ft. truss spans have a clearance above the cinder floor of 24 ft. 8 ins. The central depth of the span is 10 ft., sloping off to a 7 ft. depth at the side walls. Down the centre of the roof, there is a monitor roof, 20 ft. wide, and 10 ft. deep, with a 36 in. cast iron ventilator over each section. With spacious windows in the side and end walls, and the windows along the sides of the roof monitors, the shop is well lighted.

The shop interior is well served by a 2 ft. service track. Through the centre, running lengthwise of the shop, there is a track, with a connection through the centre of the north wall to the outside through that side

F5 100 lb. rubber cushioned hammer. Average blows per minute, 275. Motor driven.

F6 Double end punch and shear. 15 in. throat. To shear 8 by  $1\frac{1}{4}$  in., punch  $2\frac{1}{2}$  in. hole in  $1\frac{1}{8}$  in. plate. Complete with shears and 12 punches and dies from  $\frac{5}{8}$  to 2 ins. Motor driven.

F7 Quick acting guillotine frame bar shears. 30 ins. wide. Shears for cutting round bars from  $\frac{1}{2}$  to  $2\frac{1}{2}$  ins. 3 sets of shears. Motor driven.

F8 Special spring stock shear. Guillotine type, with capacity to shear 6 by  $\frac{5}{8}$  in. block. Motor driven.

F9  $2\frac{1}{2}$  in. double bolt cutter. For tapping and threading from  $\frac{5}{8}$  to  $2\frac{1}{2}$  in., right or left. Complete with pump and two sets of right hand and one set of left hand dies from  $\frac{5}{8}$  to  $2\frac{1}{2}$  ins., and one set each of right and left nut taps. Motor driven.

F10  $1\frac{1}{2}$  in. triple bolt cutter. For tapping and threading from  $\frac{3}{8}$  to  $1\frac{1}{2}$  ins., right or left. Complete with pump and two sets of right and one set of left hand dies from  $\frac{3}{8}$  to  $1\frac{1}{2}$  ins., and one set of attachments and four dies for threading coach screws  $\frac{3}{8}$ ,  $\frac{1}{2}$ ,  $\frac{5}{8}$  and  $\frac{3}{4}$  in. Motor driven.

F11 1 in. double bolt cutter. For tapping and threading  $\frac{1}{4}$  to 1 in., right or left. Complete with pump and two sets of right hand dies from  $\frac{1}{4}$  to 1 in. Motor driven.

F12 2 in. bolt pointing machine. For pointing bolts and studs from  $\frac{1}{2}$  to 2 ins. Complete with pump and cutting tools from  $\frac{1}{2}$  to 2 ins. by 8ths. Motor driven.

F13  $1\frac{1}{2}$  in. bolt pointing machine. For pointing bolts and studs from  $\frac{1}{2}$  to  $1\frac{1}{2}$  in. Complete with pump and tools for bolts from  $\frac{1}{2}$  to  $1\frac{1}{2}$  in. by 8ths. Motor driven.

F14 1 in. bolt pointing machine. For pointing bolts and studs from  $\frac{1}{4}$  to 1 in. Complete with set of tools from  $\frac{1}{4}$  to 1 in. Motor driven.

In conjunction with the foregoing machines, there are the following forges:

Continuous rivet furnace. 2 ft. 7 ins. by 16 ft. long, chargeable from either end.

Furnace for bulldozer. 5 by 8 ft. inside.

Furnace for  $2\frac{1}{2}$  in. forging machine. 4 by 2 ft. inside.

Furnace for 1 in. forging machine. 4 by 2 ft. inside.

Furnace for rubber cushioned hammer. 4 by 2 ft. inside.

The Nickel Plating and Brass Finishing Shop is situated in the gallery of the locomotive and machine shop, away from the car department buildings. It contains the following equipment:

Nickel plating.

Buffing machine. Driven from line shaft.

Buffing machine. For scratch buffing. Driven from line shaft.

Sand blast machine.

Plating dynamo. 338 amperes. Driven from line shaft.

Brass finishing.

Turret lathe. 1 by 10 in. with 6 ft. bed. Driven from line shaft.

Fox lathe. 6 in. swing, 8 ft. bed. Driven from line shaft.

Turret lathe. 1 7-16 in., with 6 ft. bed. Driven from line shaft.

14 in. shaper. Driven from line shaft.

16 in. vertical drill. Driven from line shaft.

Two buffing wheels. Driven from line shaft.

Lacquer oven. Suitable size for drying general run of small work.

The Car Department Office is a building similar in size and design to that of the motive power office building, and is situated to the south of the planing mill, back some distance from the midway, a location necessitated by the rearrangement of car department buildings which W. J. Press, Mechanical Engineer, made shortly after

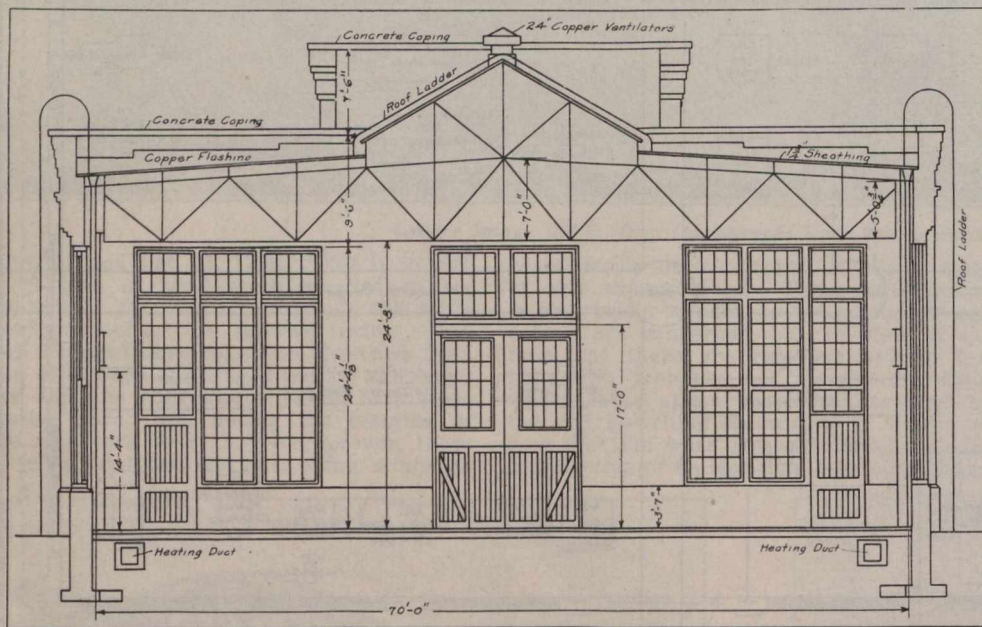


Fig. 11.—Cross Section of Wheel and Machine Shop.

which the mounted wheels can be removed from the shop without trucking. There is no connection from the shop to the rear. At right angles to this through track, there is a track crossing the shop, in one of the central sections, passing through side doors, to the local storage space outside. A central turntable connects the cross tracks. Leading from the lengthwise track, and connecting with it through turntables, there are tracks leading into each of the wheel lathes, and also into the wheel press, making it very convenient for handling the mounted wheels in and out of the machines.

Most of the machinery, it will be observed, is well grouped according to continuity of handling, and so as to minimize the amount of handling between operations. This is especially emphasized by the arrangement along the north side of the shop. At the west end are the wheel lathes for the steel wheel turning. At the other end, are the car wheel borers for the cast iron wheels, with the axle lathes adjoining. Nearly midway in the shop length, is the wheel press for assembling the wheels and axles. The arrangement of the car wheel borers and axle lathes at the east end is capable of

door. Another service track runs midway down the shop in the section north of the central shop track. This track crosses the north and south track, and also has two other north and south connections as shown, these cross connections passing through the car department forge shop principally, as the work to be handled for the car shop is of a small nature principally, and can be carried away in lots on service track lorries.

The equipment of the forge shop for car department use is as follows:

F1 Automatic feed continuous motion heading machine. Capacity up to 1 in. rivets. Set of dies from  $\frac{1}{2}$  to 1 in. Motor driven.

F2 Improved  $2\frac{1}{2}$  in. bolt heading, upsetting and forging machine. Dies for bolts from 1 to  $2\frac{1}{2}$  ins. by 8ths. To be used for making rivets, hexagon and square head bolts. Motor driven.

F3 1 in. bolt heading, upsetting and forging machine. Capacity for heading up to 1 in. bolts at one blow. Set of dies for  $\frac{3}{8}$  to 1 in. by 16ths., for square and hexagon head bolts. Steel gear, motor driven.

F4 Bulldozer. Crosshead face, 12 by 63 ins. 20 in. stroke. Motor driven.