

- 57 Automatic screw machine.
- 58 Automatic screw machine.
- 62 Emery wheel.
- 63 2-spdl. Drill.
- 64 6-spdl. Drill.
- 65 Hollow hexagon nut facer.
- 66 Nut facer with complete attachments.
- 67 2-in. Bolt cutter.
- 68 1½-in. Screw machine.
- 69 2-in. 4-spdl. Nut tapper.
- 70 14-in. Bolt lathe with taper attachments.
- 71 16-in. Bolt lathe with taper attachments.
- 72 16-in. Bolt lathe with taper attachment.
- 75 6-spdl. Drill.
- 76 16-in. Engine lathe.
- 73 Centering machine.
- 74 1½-in. Triple head bolt cutter.
- 77 30-in. Engine lathe with taper attachment.
- 78 2-in. Triple head bolt cutter.
- 78A 6-spdl. Staybolt threader.
- 79 Grindstone.
- 80 16-in. Shaper.
- 81 27-in. Planer.
- 82 20-in. Engine lathe with taper attachment.
- 83 27-in. Planer.
- 84 2-in. Spindle drill.
- 85 36-in. Vertical boring machine.

At the front end of the shop is located the rod department with tools as follows:

- 86 32-54-in. Engine lathe with taper attachment.
- 87 36-in. Engine lathe.
- 88 30-ton Forcing press.
- 89 48-in. Radial drill.
- 90 Guide bar grinder.
- 91 Grindstone.
- 92 Double emery grinder.
- 93 36-in. Boring mill, turret attachment.
- 94 32-in. Drill.
- 95 20-in. Engine lathe with taper attachment.
- 96 37-in. Boring mill.

Coming next to the gallery, which extends the full length to the shop over the 40-ft. bay, it is here that the departments with lightest machinery, etc., are located. From the left the first compartment is the tin shop, which is very fully equipped with the best tin shop appliances, including formers, folders, shears, groovers, turners, burrers, etc. Alongside this room is the paint shop for the storage of paint for the locomotive department.

Proceeding along the gallery, the next room passed is the lavatory, equipped with the latest and best in shop lavatory utensils. The locker room adjoining contains double tiers of 12 x 12 x 42 sheet steel lockers with expanded metal doors.

Next in order is the air brake department, where all the air brake apparatus is to be tested and repaired. It is fitted out with the usual standard testing devices with the necessary tables and stands as shown.

- The brass department, which comes next, contains a series of brass working tools working from an electric group drive. These machines are as follows:
- 97 18-in. Engine lathe.
 - 98 18-in. Monitor geared head lathe.
 - 99 18-in. Monitor geared head lathe.
 - 100 18-in. Monitor geared head lathe.
 - 101 18-in. Geared head lathe.
 - 102 2-in. Spindle miller.
 - 103 18-in. Monitor lathe with taper attachments.
 - 104 24-in. Radial drill.
 - 105 Turret drill.
 - 106 14-in. Crank-driven shaper.
 - 107 18-in. Engine lathe with taper attachment.
 - 108 16-in. Monitor lathe with taper attachment.
 - 109 Buffing machine.
 - 110 Cock grinder.
 - 111 Bench grinder.

Next to this brass department is a similar set of locker and toilet rooms to those just described. In the corner at the front of the building are the belt and electrical departments.

In addition to the toilet rooms provided in the gallery, there are four urinal stands located at uniform distances down the shop at the columns forming the dividing line between the erecting and electrical departments.

Indirect heating apparatus is installed in the building of sufficient capacity to keep all parts of the shop at a temperature of 60 degs. F. when the outside temperature stands at 20 below zero. Exhaust steam from the powerhouse and the exhaust of the circulating fans is supplied to the heating coils, and the air drawn through these coils is driven by fans through the underground concrete ducts and delivered into the building at floor level through outlets along both walls under the windows.

The flooring of the ground part consists of 3-in. wooden planking spiked to sleepers bedded in bituminous concrete. The gallery floor is of concrete.

THE BOILER AND TANK SHOP is located at the extreme rear end of the locomotive shop, as shown at the left of fig. 2. This shop, 180 ft. in length, has four bays, 60, 50, 30 and 65 ft. wide respec-

- 160 61-in. Throat horiz. hydraulic punch.
 - 162 Single end punch and shear (m.d.)
 - 78 2-in. Triple head bolt cutter.
 - 146 4-spdl. Drill.
 - 151 4-spdl. Drill.
- In addition to these, there are the forges, flange fire and annealing furnace indicated. All power-driven machines are group drive except where otherwise noted. Like the last bay, there is a standard gauge track running its length with end turntable to transfer to the through track.
- The third or 30-ft. bay contains all the lighter machinery, most of which is operated in a group drive. The machines are:
- 165 200-ton Hydraulic wheel press (m.d.)
 - 157 24-in. Drill press.
 - 154 Small punch.
 - 159 80-in. Rod drill.
 - 153 48-in. Rod drill.
 - 155 12-in. Slotter.
 - 149 Axle lathe with crane.
 - 160 36-in. Car wheel boring machine.
 - 180 2-spdl. Drill.
 - 161 36-in. Car wheel boring machine.
 - 150 Axle lathe.
 - 156 Double emery grinder.
 - 145 7-ft. Belt-driven bending rolls.

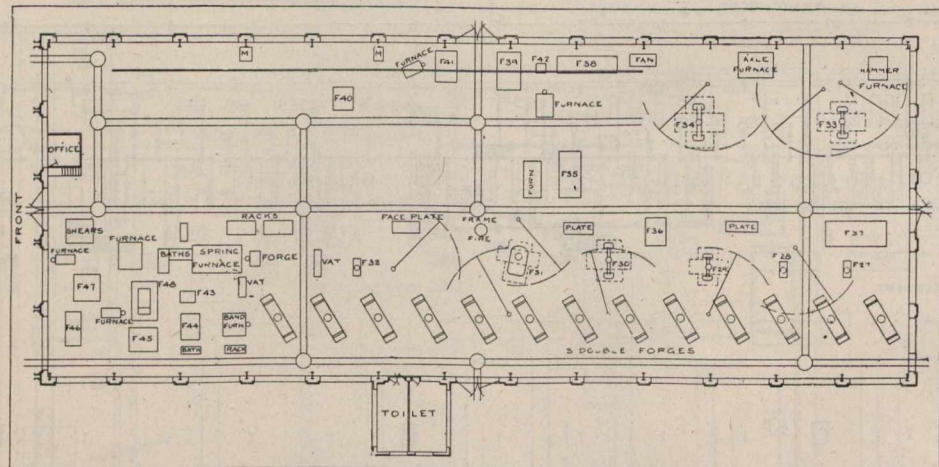


Fig. 3. Plan and Tool Layout of the Forge Shop.

tively, running at right angles to the locomotive shop bays. The height of the shop is 36 ft. from the floor to the bottom chord of the roof truss.

The 60-ft. bay, adjoining the locomotive shop, is for general boiler work for erection purposes. It is served by a 30-ton travelling crane running the length of this bay. At the north end in the end of the locomotive shop through a large opening, located in the usual tower, there is a 17-ft. 6-in. gap rivetter, 178, served by a 20-ton electric crane. This tower is served from the boiler shop by a service track for the transferring of the boilers. At the lower end of the boiler shop bay there is a testing pit, and alongside a 12-in. by 15-ft. hydraulic accumulator, 169. Along the wall are the hydraulic engineers' and fitters' benches.

The second bay, 50 ft. wide, is devoted to heavy machinery and is served by a 10-ton electric crane for the handling of the material. The machine equipment of this bay is as follows:

- 170 12-ft. Flange clamp.
- 172 Triplex 3 x 8 hydraulic pump (m.d.)
- 167 Wall radial drill (m.d.)
- 168 560-ton, 4-col. Hydraulic forging press.
- 147 Punch and shear.
- 148 Grinder.
- 166 14-ft. Horizontal bending rolls (m.d.)
- 158 25-ft. Plate planer.

- 164 42-in. Car wheel lathe (m.d.)
- 165A Car box borer (m.d.)
- 144 8-ft. Hand lever flanging clamp.
- 143 6-in. Hand rolls.

This bay has a gallery extending 100 ft. over it up to which the stairs indicated lead. This gallery contains the indirect heating plant for the building, and in addition the locker and toilet rooms. The balance or open section of the bay is served by a 5-ton electric travelling crane.

The rear or 65-ft. bay houses the tank shop stands, where 9 tracks are provided for tender tank repairs. A 20-ton crane spans this bay and handles the necessary materials.

This building is also heated by indirect radiation, a system of ducts and outlets similar to those in the locomotive shop being used. A 3-in. wood floor of similar construction is also used throughout. In the light-machine bay there is also a motor-driven air compressor, making this shop equally independent of the powerhouse for its compressed air supply. Standby connection is also made with the locomotive shop line.

One characteristic particularly noticeable in this shop is the convenient layout of the tools in such a manner that there is no interference from nearby machines while either one is being operated upon. This feature required special attention, considerable study being devoted to the arrangement of tools to