

cent to each other. The assembled box is then moved over to the 7 ft. radial drill, for the drilling of oil and plug holes, the plugs being here fitted. Passing on to the vertical miller, the brass is bored out to fit the journal, the box being then ready for the 3 ft. planer, where the shoe and wedge fits are planed. The boxes thus make a belt line, entering the west end of the department and working around to the east, and then back to the driving wheel department for mounting.

The rod department, fig. 5, is located directly to the west of the driving wheel department, and contains a hydraulic press, 14 in. slotter, 20 in. boring mill, 18 in. shaper, 18 in. emery, 18 in. double rod shaper, and a 24, 20 and an 18 in. engine lathe in the distribution shown in figs. 2 and 5. The wall group is on a group drive. With a passage in the centre of the bay through the department, there are three vise benches, two north and one south of the passage. Between these benches, parallel to the passage so that the ends are near the benches, the rods are mounted on low trestles in a convenient position for fitting.

The rods as they come initially from the wheeling crane pit, which it will be noted, is conveniently located to the rod department by means of the cross track, where they are removed from the locomotive, have

walls, and in a central rack, providing for the accommodation of a wide range of stores. The tool distributing room will be described later, in connection with the tool room itself.

The air brake department, fig. 9, occupies the north wall in the next three sections. At the east end of the department are two racks for the accommodation of air brake fittings and inspirators, lubricators and parts, all of which are here repaired. In the main part of the air brake department (left foreground in fig. 9), there is a lye vat, steam heated, for the complete immersion of greasy compressors or their parts.

Parallel with the wall bench are four pedestals carrying a face plate, free to revolve in a vertical plane. To these face plates, compressors are secured, the revolving feature making all parts equally accessible to the mechanic. The bench to the south of these stands carries an air brake testing outfit, and at one end, a gauge tester. The end of the air brake department adjoining the door is set apart for the repair of water pumps, for the most part gasoline, which are sent in from all parts of the system.

The piston and crosshead department, left background in fig. 9, occupies that portion of the shop in sections 6 to 9, alongside the row of columns. It contains a 30 in. en-

following machines:—4 spindle vertical stay-bolt drill, lathe centering machine, two 16 in. lathes, 18 in. lathe, 16 in. grinder and two 18 in. lathes, all on a 15 h.p. group drive. In the same department, along the line of columns, there is a double 18 in. shaper, 24 in. lathe and a radius link grinder attached to the centre bay side of a column. The centre of the department contains three vise benches, with a surface plate at the end of the centre one. Beyond the east bench is a rack for carrying such motion work parts as motion pins, valve glands, cups, springs, etc.

The manufacturing department occupies that portion of the north bay to the west of the through track in section 4, up to the last section which is partitioned off by a screen for the brass department. It is the practice in these shops to make standard and have them stocked for the general stores department, drawing from there for all parts of the system as well as for the local shop when required. It is in this department, called the manufacturing department, that all stock work is made up.

In the north west corner of the department, there are three vertical boring mills; the first, a 42 in., works steadily on piston and valve rings; the second, a 24 in., on motion work such as valve bushings, etc.; the third, a 24 in., on general stock work. Adjoining, there is a 4 spindle drill, used

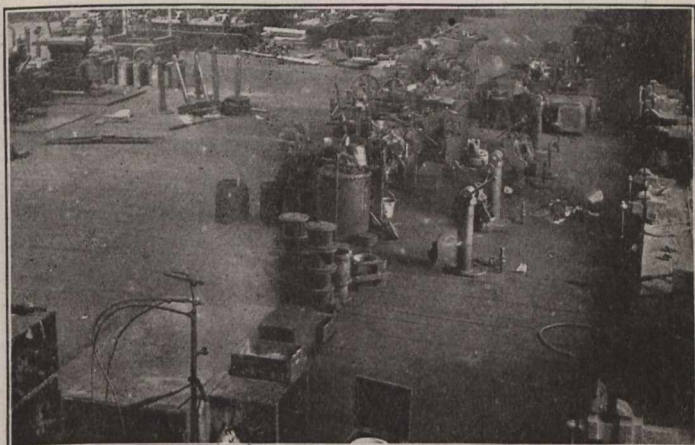


Fig. 9.—Air Brake Department; Piston Department on Left.

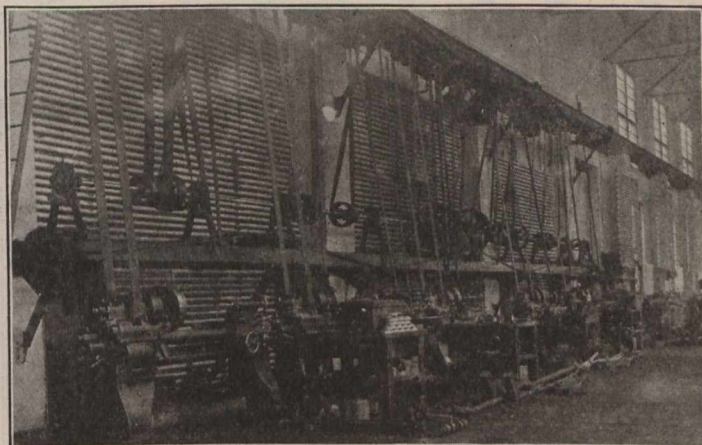


Fig. 10.—Part of Motion Work Department.

the brasses removed under the hydraulic press, and then passed on for further fitting. The 20 in. boring mill is employed principally in boring brasses, and the 18 in. shaper in surfacing them. The 18 in. shaper along the row of columns is used in making shims, pads, etc. The other machine tool equipment is used for miscellaneous rod work.

The group of four benches in sections 12 and 13 of the north bay is for the millwrights and carpenters, where all the repairs to cabs, running boards and pilots are made.

Next adjoining this department, in section 11 and extending out into the centre bay, is the pipe fitters' department. This is equipped with two power pipe machines, two small open forges for copper pipe and other bent work, work benches fitted with ordinary and pipe vises, and a pipe rack at the west side, facing the central bay. For bending pipe, there is a lead lined block mounted on a pedestal in the floor.

About the centre of the north wall, in the background of fig. 5, are located the tool distributing and the petty stores rooms, over which are the offices of the shop officials as mentioned before, commanding a view of the whole shop. The petty stores room contains such minor stores as are in constant demand in the shop, and is well arranged with pockets on the rear and side

gine lathe with 10 h.p. drive, operating steadily on piston rods; a 4 ft. planer for crossheads, but also planing slippers, balance plates, steam chest covers and similar work; and a 30 in. boring mill for piston heads and cylinder covers. Adjoining a column, there is a bench for fitting, and attached to the column there is a jig for the mounting of pistons and piston rods, and holding them securely together while the piston rod nut is being tightened on. The crosshead work is handled across the through track in section 18, where there is a 27 in. and a 40 in. planer and two 24 in. shapers. It will be noted that the piston and crosshead department is almost centrally opposite the erecting shop, where the pistons and crossheads are removed from the locomotives, as against the removal of the rods under the wheeling crane.

All of sections 4 and 5, in the north bay, parts, that are used in quantities, in batches are occupied by the motion department. Nearly all the machinery here is small, for most of the motion work is of a light nature. All the motion work is made or repaired here with the exception of the eccentric sheaves and straps, which are produced in the 32 in. boring mill in the driving box department, and the surface grinding on the 36 in. surface grinder to the east of the piston and crosshead department. From east to west on the wall, as in fig. 10, are the

for the most part in drilling coupler pockets, arch bars and similar bulldozer forgings. Alongside this, there is a 3 spindle 2 in. bolt machine for rough stock bolts. These last two machines are close to the blacksmith shop door, from which the stock to be worked is received. These machines are on a 20 h.p. group drive. Along the brass room wall are two lathes, one 18 in., and the other 24 in., for general stock work.

To the north of the columns, there is a battery of four turret lathes for the stock production of bolts, studs, pins, hexagon head bolts, etc. This battery contains a 2 in., two 2½ in., and a 5¼ in. machines. The latter is for use on larger stock such as wrist pins, crank pins; knuckle pins and brake hanger pins. To the south of the row of columns and in the same department are a 32 in. drill, double 18 in. emery wheels and a 6 spindle nut tapper, these together with the turrets being on a 35 h.p. group drive.

All the machine tools in the central bay, fig. 3, other than the ones especially excepted in the foregoing, are in what is usually termed the general department, where all work that cannot be well classified into various departments is handled. From the driving wheel department adjoining the tender shop west ward, there are the following machines in groups and singly: Grindstone, three 16 in. vertical