speed control. Reverse gear. Motor driven.

P29. Sash mortising and relishing machine. Routing and wedge cutting attachment. Two hollow chisels and bits, relishing bit and head with knives, tool holders, stops and layout gauges. Routing bit, with blind router, five saws with door relishers, and two with wedge cutters. Motor driven.

P30. Single spindle vertical borer. Universal table and gear driven head, two speeds. Bits up to 2 in. diam. and 12 in. twist. Bits 3-8 to 1½ in. Motor driven.

P31. Heavy door clamp. For doors, sashes or blinds. Up to 4½ ft. wide rails, 9 ft. 4 ins. long. 12 clamp dogs and end clamp bar, foot release lever.

P32. Scroll saw. 36 in. square table, with central 8 in. diam. cast iron plate. The strain to be raised or lowered for thicknesses up to 12 ins. Pump to blow dust away. Motor driven.

P33. 20 in. double end wood lathe. Large face plate for back of headstock. Floor stand and rest for large diameters. Centres and chucks. Belt driven from line shaft.

P34. 30 in. knife grinder. Carriage has automatic feed and stop and water pump. 24 by 1½ in. emery, wet or dry. Belt driven from line shaft.

P35. Circular saw sharpener. To sharpen cross cut saws from 6 to 44 ins., rip saws 12 to 59 ins. Square or bevel teeth. Belt driven from line shaft.

P36. Band saw filing and setting machine. Sticking attachment. Belt driven from line shaft.

P37. Double emery grinder. Two 12 in. emerys, respectively 1 and ½ in. faces. Belt driven from line shaft.

P38. Grindstone. 60 by 8 ins. Trough. Belt driven from line shaft.

P39. Belt sander. Capacity 5 ft. 2 ins. by 42 ins. by 18 ins. Motor driven.

P40. Four sided extra heavy moulding machine. Frame built up from plain cast iron bed plate. Table working by screw working on ball bearings. Feed consists of an under and two upper driving rolls, and controlled through a friction clutch for starting and stopping. Feeds from 15 to 60 ft. Motor driven.

P41. Hollow chisel mortiser. Compound angular table for making mortises at an angle with the face of the stock. Chisels ¼ to ¾ in. square, 23 in. stroke. For material 5½ by 6 ins. Motor driven.

P42. Automatic knife grinding machine. Automatic travel of slide, screw cross feed variable in taper at will, water attachment with pump.

P43. Sash and door car tenoner. Carriage wide and long, moving on roller bearings. To cut tenons 7½ ins. long at one pass. Motor driven.

All shapers, rip and cross cut saws and buzz planers are equipped with patent safety guards, to minimize danger of operating to the mechanics. Machines P10 and P13 are special gaining machines invented by A. Leclair, millwright in the G.T.R. Montreal car shops. Machines of his design, in use in the different G.T.R. car shops, have been described in these columns recently.

The north portion of the mill contains all the smaller wood working machinery, all the machines being served by a 2 ft. industrial track extending through the building. Entering the building from either end, in line with the industrial track, there is a standard gauge track, over which the timber may be brought into the shop in car lots for machining, and be reloaded for shipment if required. It will be observed that the location of the machinery is open in its nature, allowing ample space for manipulating the smaller timber members without interference. The machines are so arranged with regard to each other as to facilitate the sequence of operations.

The heavier and larger members are handled in the south section of the shop, between which and the other section there is an industrial track, running the length of the shop along its centre line. From both ends there are standard gauge tracks entering the building, the west one 50 ft. long, and the east one 100 ft. long, used for the same service as in the former instance. The machinery in this section is so arranged as to give a continuous movement of the members through the shop. The principal parts handled in this section will be the side and end sills. These will enter from the west, passing through the planers, the end sills passing through the tenoner, and side sills through the mortiser. Thence they will pass to the boring and mortising machines, completing the series of operations at the west end, where they can be loaded on cars on the standard gauge track.

The proximity of the planing mill to the passenger car and freight car shops makes for a rapid handling of the material from the mill to the assembling shops. The material from the stock sheds to the rear of the mill passes through the latter, coming out at the midway end completely machined, with practically no retrograde movements in that shop, thence across the midway to either the passenger car or freight car shops. The wood working machinery used principally on passenger car work is grouped for the most part in the northwest portion of the mill, where it is handy to the passenger car shop. The open space in that portion of the mill is an assembly floor for the fine fittings.

The Lumber Shed is to the rear and in line with the planing mill. It is a purely frame building, 60 by 165 ft., and is spanned by wooden trusses at 15 ft. centres, being also divided into three 20 ft. longitudinal bays by supporting columns. The wall intervening columns are all 8 in. square timbers, extending to a height of 17 ft. above the ground, the lower end encased in concrete and sunk to a depth of 4½ ft. The wall framing consists of 2 by 4 in. studding at 2 ft. centres, with 6 by 1 in. cross brace, the outside covered with 1 in. sheathing. The roof trusses consist of a lower 6 by 10 in. member, with 4 by 6 in. bracing, and 6 by 8 in. stringers. The roof is covered with 1¾ in. sheathing, covered with prepared roofing. In every other section, there are two 6 by 10 in. skylights in the roof, one in each side.

Through the centre of the shop there extends a standard gauge track for bringing in and taking out the stored lumber. The dimensions of the building are such that most of the lumber may be stored at right angles to this central track, from cars on which it can be unloaded.

The Dry Kiln is contained in a brick and concrete building, 40 by 50 ft., to the southeast of the planing mill, near the lumber shed, in length from east to west. Through the centre there is a concrete separating wall, dividing the kiln into two separate sections. Each section contains two 4 ft. 11 in. tracks, at 9 ft. centres.

The side and dividing walls each contain a 2 in. air space, inside of which there is a 4 in. wall to the kiln interior, with a 9 in. wall to the outside. The dividing wall has this thickness each side of the air space.

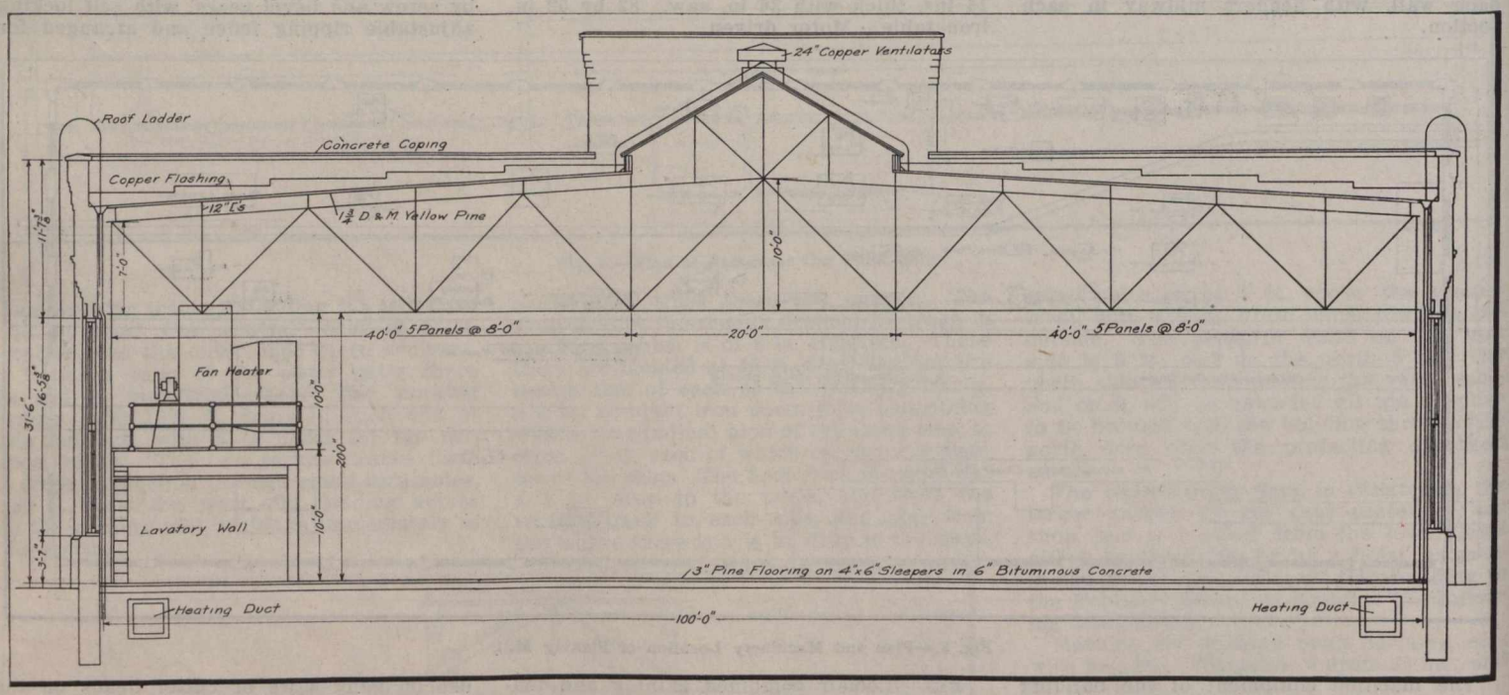

Fig. 9.—Cross Section of Planing Mill.