west corner, where there is located a 20 in. stroke bulldozer having a ram 6 ft. wide and 1 ft. deep. This has an oil furnace 9 ft. wide and 3 ft. deep, butting on the end wall. The numerous bulldozer forms are stored in the ground floor room of the fan building. Adjoining the bulldozer, there is a 1½ in. upsetting machine to the right in fig. 15 with an oil furnace similar to that for the bulldozer. This upsetter is employed steadily on bolt and nut work, principally for stock, and has a normal capacity of 6,000 ¾ in. bolts in a 9 hour day. Alongside of this, for convenience in the final handling of the bolts here produced, are two 3 spindle 1½ in. threading machines. Opposite this, there is located a no. 8 Beaudry hammer for general car work.

Heavy upsetting work is handled in the heavy upsetting machine to the south of the doorway opening, alongside of which there is an oil furnace of similar size to the last two. A wide range of dies has been made for this machine, some heavy and intricate forgings being produced in the ordinary course of work. The regular run of work includes large bolts, cotter bolts, eye bolts, grab irons, etc. Adjoining this machine is located a cold cutoff saw, 30 ins. diameter, for general work.

The balance of this part of the shop is given over to spring work. The equipment includes a special spring punch, cutting and punching spring leaves up to 6 x ½ in.; a hand-operated clamp for fitting on the spring buckle; a spring roller with air-operated clamping mechanism, shortly to be replaced by a machine that not only clamps down the upper roll by air, but will also turn the upper roll, passing the spring leaf through; a spring leaf surface block; a spring leaf oil bath; and a spring oil furnace in the corner. This equipment is shortly to be supplemented by a buckle press. Adjoining the spring furnace, there is a small open forge with anvil for general spring work. There is also a small hand punch. This department has a capacity on the average of ten 14 leaf springs of 5 x 7-16 in. stock per day.

The oil for this shop is stored in a tank located in a central skylight, from which it feeds by gravity to the several oil furnaces.

The present capacity of the blacksmith shop has become taxed to such an extent that a 4 section addition to the north of the building is being erected, increasing the shop length by 96 ft., all as shown by the dotted lines to the north in the plan, fig. 1.

The end wall has been knocked out to make the shop open throughout. The machine and forge arrangements will be altered by this addition, but the general disposition will be along the order of the plan as at present in use.

The equipment of the blacksmith shop was furnished by the following firms:—Jno. Bertram and Sons Co., Dundas, Ont.; Bell, Buffalo, N.Y.; Beaudry and Co., Boston, Mass.; Acme Machinery Co., Cleveland, O.; Clifton-Waddell, Johnstone, Scotland; Jno. Evans, Philadelphia, Pa.

THE FOUNDRY, A. Knight, Foreman, is located in a building 129¾ by 100 ft., directly to the north of the blacksmith shop, as shown in fig. 1, and resembles in general design both that shop and the machine shop, being of brick construction with three bays, the central bay being 39 ft. 8 ins. wide, and the two side ones each 28 ft. 8½ ins. wide, the roof trusses being supported by steel columns between the bays at 16 ft. intervals.

It has been designed with a view to the future, for the proportions are such that it will be amply large enough for the handling of locomotive and car repair work for some years to come.

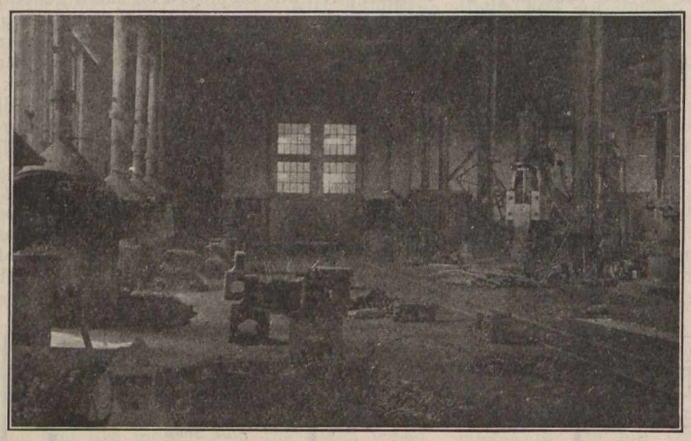

Fig. 14.—East Side of Blacksmith Shop, Looking South.

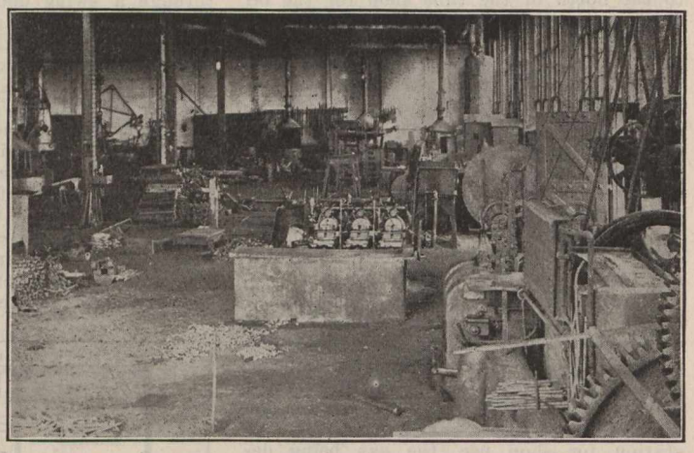

Fig. 15.—West Side of Blacksmith Shop, Looking South.

convenience, the balance being permanently stored in the stores building.

Along the east wall, in the northeast corner of the building, are located the moulding machines for the stock production of parts required in large numbers. In the same row are three match plate moulding tables, where a large portion of the duplicate moulding work is handled. Another table to the south of the lavatory is employed on general work.

In the east bay, it will be noticed that there is an industrial track for the handling of flasks, sand, patterns, etc., connecting at the centre with a similar track down the west side of the centre bay, through a central cross track, with turntables at each end.

Occupying the two central sections of the west bay, the cupola is located in a large room, designed for the accommodation of a second cupola, which may possibly be installed at a future date. The present cupola is 46 ins. diameter, with a capacity of about 6 tons. The clear ground space in the cupola room provides ample space for the cupola room attendant in his work of lining the ladles and crucibles. The cupola tap is into the central bay, pouring on a line over the top of the service track along that wall. Ladles up to 4 tons capacity are in use, although the larger size castings

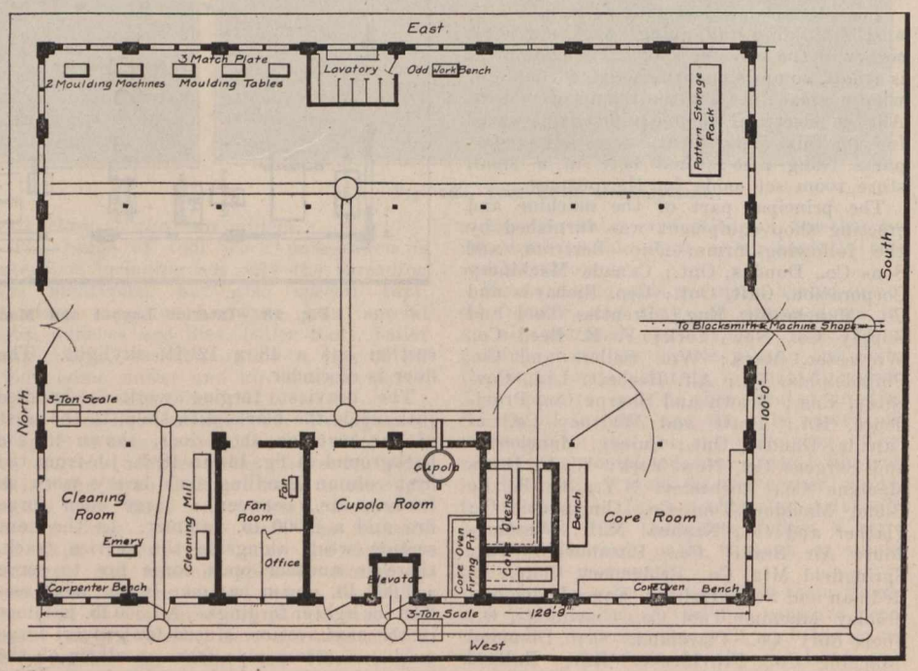

Fig. 16.—Interior Layout and Arrangement of Foundry.

The central and east bays form the large moulding floor, this space being practically clear except for the lavatory similar to the ones in the other shops, in the third section from the north on the east side, and a pattern storage rack filling the whole end section in the southeast corner of the building. In this rack, all patterns in more or less constant use are stored for the sake of