

stroke, are of grey iron cast in one with the steam chest and bolted together. The columns are of cast steel and their shape was carefully worked out. On account of

together at the bottom and the shaft bearing and engine supporting angles.

There is a crank pin in front of the drag link. The pins are hollow and in many

ters and steadying blocks, all of which are operated by compressed air. The slides in the centre carry the bracket for the electric headlight, which can be lowered down into the cab when required.

The boiler applied to these plows is similar to that on the C.P.R. class M. 4 consolidation locomotives, with the exception that the superheater was omitted. It was thought that as the plows would only be used a few times each year the economy resulting from superheating was important, while the possibility of the apparatus leaking or not being perfect order when required would be objectionable. The boiler contains 2,108 sq. ft. of heating surface and 44 sq. ft. of grate area, and carries 200 lbs. pressure. It is, therefore, of far greater capacity than any previously employed on this class of work. The trucks are of the six wheel type, but of special design, having cast steel frames. The axles are the M.C.B. 50,000 lbs. standard with 7 by 12 in. journals, and the wheels 34 in. diameter with steel tires. On account of the plow having no centre frames, but simply two main longitudinal girders, no weight is carried on the centre plates, which are used simply to guide the trucks, and the weight is carried on sliding surfaces located between the side frames of the trucks and the plow girders. On account of there not being sufficient room the usual type of truck equalizer could not be applied, and

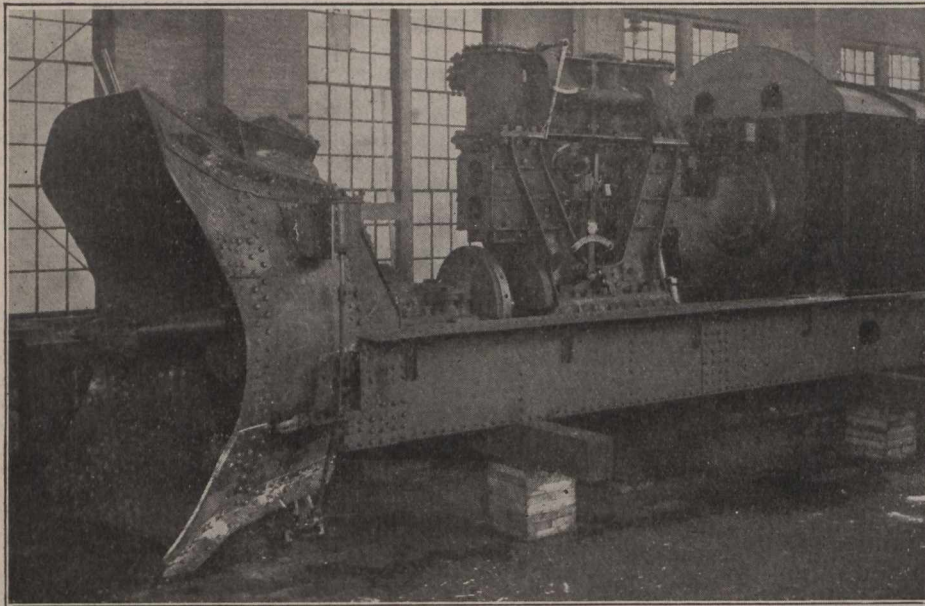


Fig. 10.—New C.P.R. Snow Plow, Partially Assembled, Showing Cut Widener and Driving Engine.

head room the length of connecting rod is very short in proportion to the stroke, only 1.87 to 1, which required ample bearing surface in the crossheads. This feature has, however, given no trouble. This view shows the reverse lever and throttle, which are in duplicate, so that the plow may be operated from either side. On the casing can be seen the steady block arrangement. This comprised a shoe on either side of the casing which can be forced down on the rail to steady the plow when taking heavy cuts. It is operated by an air cylinder, but this has not proved satisfactory and is to be changed to a hand lever.

The frames are box girders 36 ins. deep at the front end, the outer plate being  $\frac{3}{8}$  in. thick, the inner  $\frac{1}{2}$  in. The top and bottom flanges are 13 in. ship channels, and the frame is carried back full depth to the

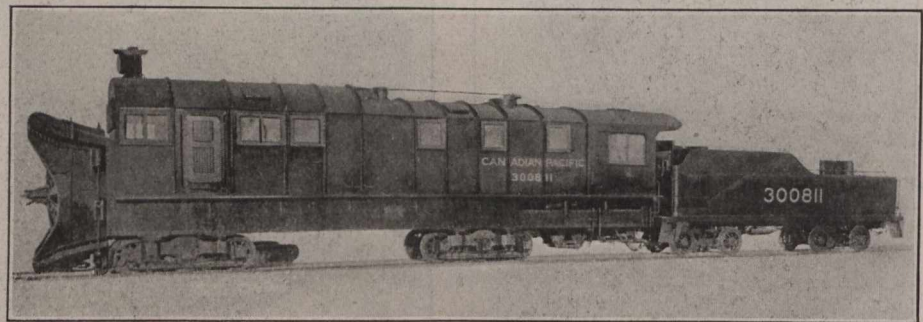


Fig. 11.—General View of New C.P.R. Snow Plow.

respects weight has been saved as much as possible. The valve in the centre of the

underhung equalizers are used which bear on pins in lugs cast on the boxes. To save weight the end pedestals are dispensed with and the frame is formed with guides, which engage with grooves on the journal boxes. This design of truck is exceedingly light for its strength, and with certain exceptions that will be referred to later, has proved satisfactory. The general appearance of the plows is shown in figs. 11 and 12. Their size may be judged from the frame being 48 ft. 4 in. long over all from the casing to the rear end. They weigh 260,000 lbs. in working order, the weight being practically equal on the two trucks. The cab or covering is of steel and is smooth inside, the angles and braces being on the outside to avoid injury to the men in case of derailment. The tender attached to the plow has a capacity of 7,000 gals. of water and 16 tons of coal. It was made specially long, 32 ft. over end frames, in order to separate the weight of the plow from the engines pushing it on account of bridge limitations. The tender trucks are inside bearing four-wheel equalizer pedestal trucks, this design being adopted to use engine truck wheels and axles of standard types.

The design of these plows was commenced in July, 1910, and a considerable amount of preliminary work was required before it was possible to decide on the general plan that would be practicable. In addition it was desired to apply the new type of wheel and casing to several of the older plows in service, and in order to do this in time the

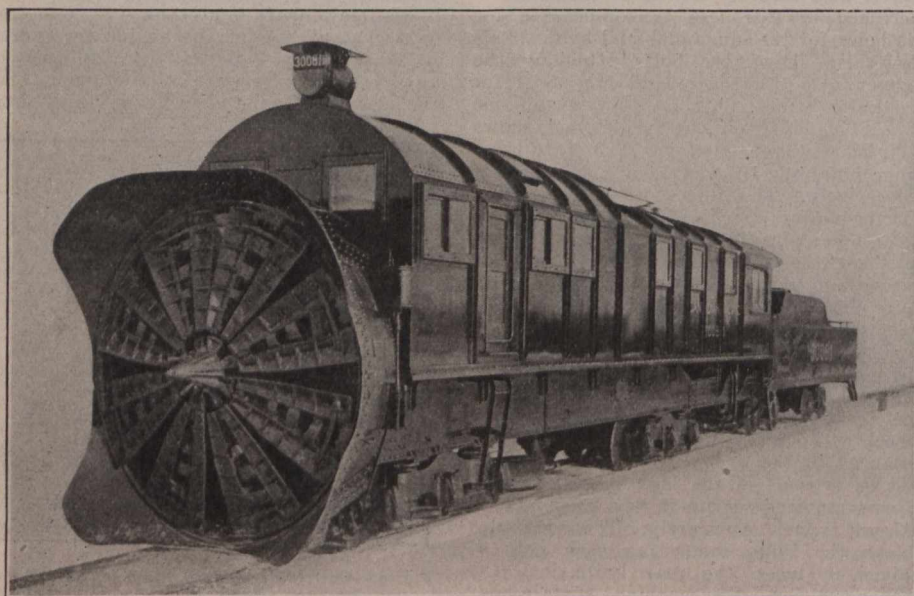


Fig. 12.—General View of New C.P.R. Snow Plow, Showing Arrangement of Cutter Head.

boiler saddle where it tapers down to 18 ins. deep at the back end. This view also shows the heavy steel front casting, the  $\frac{3}{4}$  in. plate which connects the frames

operating platform is the engineer's valve of the Westinghouse air brakes, and the one above is the straight air brake valve. The other valves control the flanger, ice cut-