

was improved by Orange Jull, who applied a knife or cutting wheel, fig. 20, in front of the Elliott wheel, fig. 21. In 1883 the Leslie Brothers built the first rotary embodying the Jull modification. The fan wheel was mounted on a hollow shaft, in which revolved a solid shaft supporting the knife wheel. The fan and cutting wheels were revolved in op-

snow could be thrown to either side of the track and that a flanger was necessary to prevent derailment in hard snow and ice and to leave a satisfactory rail after passing.

To overcome these objections the Leslie Brothers developed a wheel with manually reversible knives which could be changed in position to enable them

part of the cutter which dropped down inside of and about 2 in. below the rail head was shaped like a planer too. The part of the cutter above the rail was shaped like the blade in a wood plane, and in service position came within 1/2 in. of the top of the rail head. Two flangers, shaped very much like the mould boards of an ordinary farm

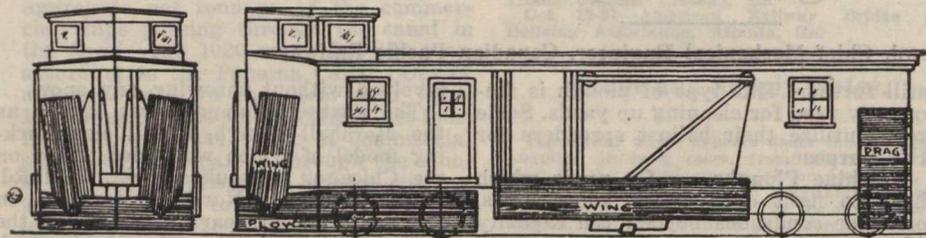


Fig. 17. Snow Spreader or Dozer.

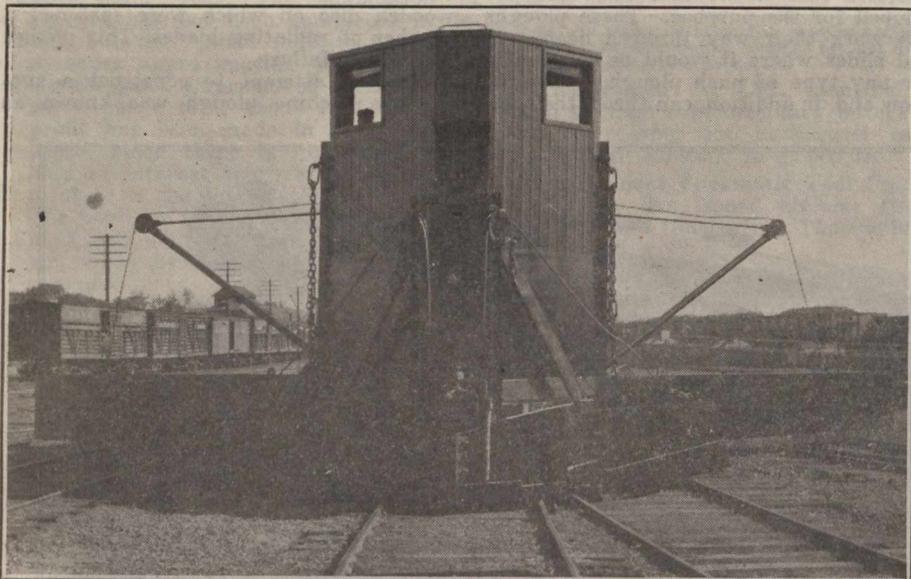


Fig. 18. Snow Spreader.

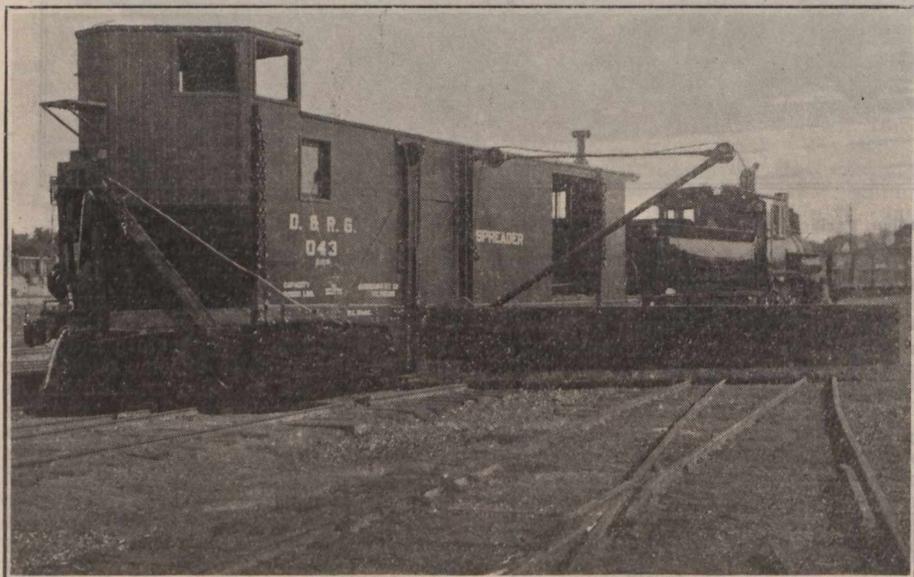


Fig. 19. Snow Spreader.

posite directions by means of a gear system. During the winter of 1883-84, the C.P.R. gave this model, fig. 22, a trial at Parkdale, Ont. This preliminary trial, in which snow and ice were thrown over 300 ft., demonstrated the practicability of removing snow with a revolving wheel. It, however, also indicated that the plough should be constructed so that

to cut in either direction. They also applied a movable hood to the cylindrical portion of the casing through which snow could be thrown to either side of the track. In addition they designed an ice cutter, and a flanger, which were applied to the front truck of the plough. The ice cutters, one for each rail, were fastened to the front of the truck. The

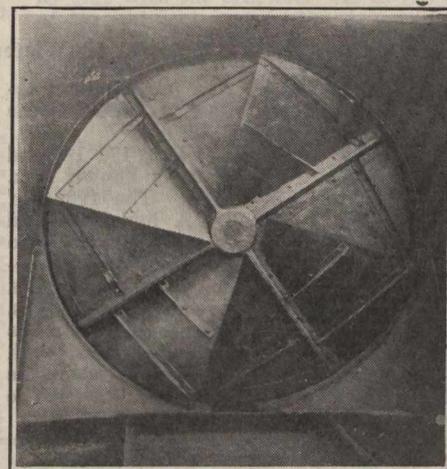


Fig. 20. Jull Cutting Wheel, for Rotary Snow Plough.

plough, were fastened to the rear of the truck. These picked up the ice removed by the cutters and put it in the corner of the cut made by the rotary casing. The cutters and flangers could be either raised or lowered simultaneously by air.

A plough containing these improvements was built for them by the Cooke Locomotive Works, of Paterson, N.J. This plough was put in service on the Chicago & North Western Ry. during the winter of 1885-86, fig. 23. It is very interesting to note that the engines of this plough were equipped with Walschaert valve gear. One difficulty, however, was experienced. The friction caused by the snow passing between the knife wheel and the fan wheel absorbed more power than that required to cut

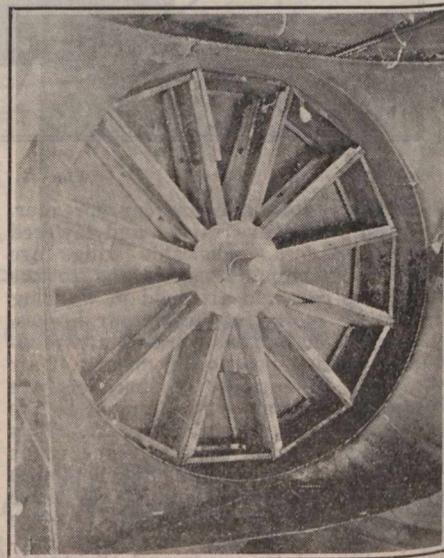


Fig. 21. Elliott Rotary Fan Wheel, for Rotary Snow Plough.

and throw away the snow. The principle of opposite revolving wheels was then abandoned and the Leslie Brothers designed a single fan wheel with adjustable cutting edges. These cutting knives were attached directly to the wheel and automatically reversed their position as