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Mechanical Handling of Gravel or Broken Stone

Slot, Elevator and Bin Method Very Successful Last Year in Brant County—Cost of Outfit Saved in One Season—Paper Read Last Week at Conference of County Road Superintendents and Engineers of Ontario

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IN embarking on this subject, there comes up in my mind's eye two scenes which stand out in startling contrast,—the coaling of a liner, first in the western hemisphere and then in the eastern. In the former case, the line of railway cars loaded with coal are standing by the elevator. The end car is uncoupled, pushed on to the elevator, the gates swing to, up goes the truck to the desired elevation where it is tilted forward and outwards and the coal is deposited with a crashing roar into the hold of the vessel by the time the hard-working crew of trimmers have levelled the pile. "Stand from under" is the word, and again the coal pours from the second car, so that the train of twenty cars is empty inside an hour. In the second case, at Port Said, the coaling is done by hand, endless strings of coolies each carrying a few pounds of coal in a basket on his head, and occupying days, with tremendous labor and incessant noise and dust.

When I was presented with the fact that my name had been placed on the program of this conference against the subject of "Mechanical Handling of Stone and Gravel," I was a little uncertain whether to treat the subject as covering the transfer of stone from its point of origin to its destination or as covering only the emptying of railway cars and the loading of wagons. I decided to confine myself to the unloading of broken stone into wagons or trucks from railway cars, as I believe that the problem presented is of interest to the majority of road builders, without going into the wider problem that might be covered by the word "transportation."

The following may be said to cover most of the usual methods of transferring crushed stone from railway cars to wagons or trucks:—

1. Shovelling by hand over the sides onto the ground, and shovelling again into wagons.
2. Shovelling by hand over the sides direct into wagons.
3. Shovelling into skips (on the side of the car) which can be tripped into wagons.
4. Shovelling by hand over the sides and loading with a mechanical loader.

5. Dumping hopper-bottom cars and loading with a mechanical loader.

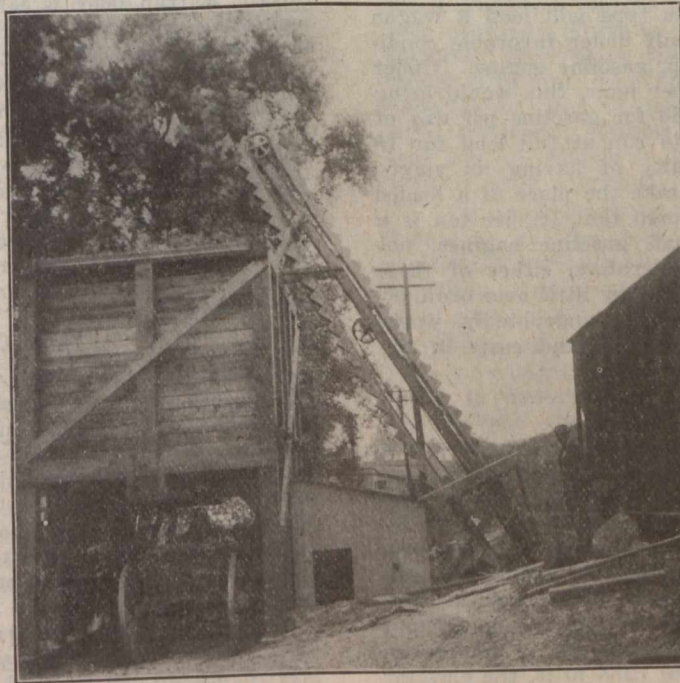
6. Dumping hopper-bottom cars over a slot in the track, the bottom of which is inclined so as to discharge onto an elevator which in turn discharges to a stock pile or storage bin.

I found that last year, with wages at 40c. per hour, the cost of unloading by hand amounted to 20c. per ton when the material was shovelled out of flat-bottom cars with about 3-ft. sides. The cost of shovelling from hopper-bottom cars would be more; in fact, I find that the prevailing price for which coal unloading is contracted around Brantford by hand is 30 to 40c. per ton. These, I think may fairly be taken as average prices.

Shovelling by hand obviates demurrage, but entails an expenditure of almost as much as the unloading charge for reloading again into the wagon, while the reloading by hand into motor trucks higher than wagons would probably bring the cost of reloading up to 30c. per ton. This method, however, of handling stone is primitive and entails having other work available at which the gang of shovellers can be placed until another car is spotted, and it is probably practised only for small quantities of materials, as the cost is not likely to be less than 50c. per ton.

Shovelling by hand out of cars direct into wagons or trucks is obviously much cheaper than the first method, because it entails handling the material once only instead of twice, but it costs more than one handling of material. This is by reason of the time lost by the teams standing idle while they are being loaded. With men at 40c. and teams at 80c. per hour, and with 1½-yd. wagons, I found the cost of unloading cars to be 31c. per ton. These were flat-bottom cars and the teamsters shovelled, and the increase in cost over shovelling onto the ground was due to the idle time of teams and shovellers, principally the former.

Every locality has its peculiar advantages or disadvantages. Some have the advantage of a raised track and sunken wagon road so that cars may be shovelled more



BRANT COUNTY'S SLOT, ELEVATOR AND BIN OUTFIT