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Hopper car

A **hopper car** (US) or **hopper wagon** (UK) is a type of railroad freight car used to transport loose bulk commodities such as coal, ore, grain, and track ballast.^{[1][2][3]} Two main types of hopper car exist: **covered hopper cars**, which are equipped with a roof, and **open hopper cars**, which do not have a roof.

This type of car is distinguished from a gondola car in that it has opening doors on the underside or on the sides to discharge its cargo. The development of the hopper car went along with the development of automated handling of such commodities, with automated loading and unloading facilities.

Covered hopper cars are used for bulk cargo such as grain, sugar, and fertilizer that must be protected from exposure to the weather. Open hopper cars are used for commodities such as coal, which can suffer exposure with less detrimental effect. Hopper cars have been used by railways worldwide whenever automated cargo handling has been desired. "Ore jennies" is predominantly a term for shorter open hopper cars hauling taconite by the Duluth, Missabe and Iron Range Railway on Minnesota's Iron Range.

A rotary car dumper permits the use of simpler and more compact (because sloping ends are not required) gondola cars instead of hoppers. Covered hoppers, though, are still in widespread use.

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Special hopper trains

The Coke Express, a unit train of hopper cars loaded with coke, with the words "Coke Express" painted on the sides of the hoppers.

Typical American freight car weights and wheel loads

Common net car loads			Gross car weights		Wheel loads	
Short tons	Long tons	Tonnes	Pounds	Kilograms	Pounds	Kilograms
80	71.4	72.6	220,000	100,000	27,500	12,500
100	89.3	90.7	263,000	119,000	32,875	14,912
101	90.2	91.6	268,000	122,000	33,500	15,200
111	99.1	100.7	286,000	130,000	35,750	16,220
125	111.6	113.4	315,000	143,000	39,375	17,860

Increase in wheel loads has important implications for the rail infrastructure needed to accommodate future grain hopper car shipments. The weight of the car is transmitted to the rails and the underlying track structure through these wheel loads. As wheel loads increase, track maintenance expenses increase and the ability of a given rail weight, ballast depth, and tie configuration to handle prolonged rail traffic decreases. Moreover, the ability of a given bridge to handle prolonged rail traffic also decreases as wheel loads increase.^[4]

Etymology

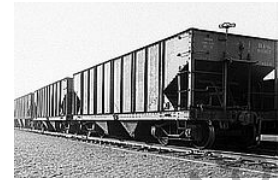
The word "hopper", meaning a "container with a narrow opening at bottom", goes back to the thirteenth century,^[5] and is found in Chaucer's story "The Reeve's Tale" (written late fourteenth century) in reference to a machine for grinding grain into flour.

See also

- Gondola (rail)
- Victorian Railways hopper wagons

References

- "Covered Hopper Railcars" ([https://web.archive.org/web/20100916213706/http://www.gatx.com/wps/wcm/connect/GATX/GATX_SITE/Home/Rail/Rail+North+America/Products/Equipment+Types/Freight/GATX Corporation](https://web.archive.org/web/20100916213706/http://www.gatx.com/wps/wcm/connect/GATX/GATX_SITE/Home/Rail/Rail+North+America/Products/Equipment+Types/Freight/GATX+Corporation)). Archived from the original (http://www.gatx.com/wps/wcm/connect/GATX/GATX_SITE/Home/Rail/Rail+North+America/Products/Equipment+Types/Freight/Covered+Hopper/) on 16 September 2010. Retrieved 11 September 2012.
- "Small Cube Open-Top Hoppers and Gondolas" (https://web.archive.org/web/20100916213808/http://www.gatx.com/wps/wcm/connect/GATX/GATX_SITE/Home/Rail/Rail+North+America/Products/Equipment+Types/Freight/Top+Hoppers/). GATX Corporation. Archived from the original



Two-bay hopper cars of the Reading Railroad



Swedish iron ore hopper (mineral wagon), built in 1900



Kambarka Engineering Works hopper car to transport track ballast, 750 mm (2 ft 5½ in) gauge



American hopper car at Pittsburg, Texas, in 2015



BOBRN class hopper cars freight rakes used by Indian Railways

(http://www.gatx.com/wps/wcm/connect/GATX/GATX_SITE/Home/Rail/Rail+North+America/Products/Equipment+Types/Freight/Small+Cube+Open-Top+Hoppers/) on 16 September 2010. Retrieved 11 September 2012.

3. "Covered Hopper Cars" (<https://web.archive.org/web/20120416165540/http://www.crdx.com/coveredHop.html>). Chicago Freight Car Leasing Company. Archived from [the original](http://www.crdx.com/coveredHop.html) (<http://www.crdx.com/coveredHop.html>) on 16 April 2012. Retrieved 11 September 2012.
4. Bitzan, John D.; Tolliver, Denver D. (October 2001). "The Economics of Heavy Hopper Cars" (<http://www.mountain-plains.org/pubs/html/mpc-01-127-4/pg2.php>). *Mountain-Plains.org*. Mountain Plains. Retrieved 2010-08-07.
5. Online Etymology dictionary: [1] (<http://www.etymonline.com/index.php?search=hopper>).

External links

- Union Pacific #7801 (<https://web.archive.org/web/20060509071410/http://sdrm.org/roster/freight/hopp7801/index.html>) – Photos and short history of an example of a typical self-clearing, open-top triple hopper
 - Rail car manufacturing (<https://web.archive.org/web/20140327040407/http://www.americanrailcar.com/RailcarManufacturing.aspx>)
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