

Modelling Cane Railways

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3D Printing:
HOn30 cane
trucks

CaneSIG: <http://www.zelmeroz.com/canesig>

3D Printing: HOn30 Cane Trucks, model and photos by Jeroen van der Schaaf

Introduction

Jeroen is a Dutch-based modeller of narrow gauge Australian tramways; his freelance *Koala Creek* is based on Queensland's shire and sugar cane tramways (<http://www.koala-creek.net>).

Jeroen has been experimenting with 3D printed parts for an HOn30 shay (diamond stack, etc.) and a cane truck that uses the Roco HOe wagon chassis. His web site has more details of his experimenting, this Handbook article describes his cane truck developments as of May 2010 and will be updated as his work progresses.

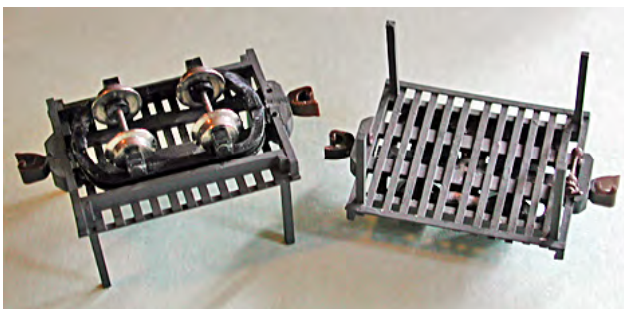
Stereolithography

"Stereolithography machines are basically 3D printers that can build any volume shape as a series of slices. Ultimately these machines require a series of closed 2D contours that are filled in with solidified material as the layers are fused together."

"STL is a file format native to the stereolithography CAD software created by 3D Systems. This file format is supported by many other software packages; it is widely used for rapid prototyping and computer-aided manufacturing. STL files describe only the surface geometry of a three dimensional object without any representation of color, texture or other common CAD model attributes."

[http://en.wikipedia.org/wiki/STL_\(file_format\)](http://en.wikipedia.org/wiki/STL_(file_format)), 7/05/10

Greg Stephenson and the Roco HOe wagon



Greg Stephenson's HOn30 (009) wholestick cane trucks showing the HOe chassis that inspired Jeroen's 3D model building. Lynn Zelmer photo.

Greg Stephenson is a Brisbane-based HOn30 (009) freelance sugar cane and shire modeler who used a commercial HOe chassis as the base for many of his sugar cane and navy models to ensure smooth operation. Additional details and modelling tips at

<http://ZelmerOz.com/canesig/members/stephenson.htm/>.



A rake of freelance loaded wholestick cane trucks, built using a HOe 4w chassis, on Greg Stephenson's previous HOn30 (009) Queensland sugar cane/shire layout. Other modelers have used different techniques trying to get a closer to scale wholestick truck, but this appears to be the most reliable for operation. Lynn Zelmer photo.



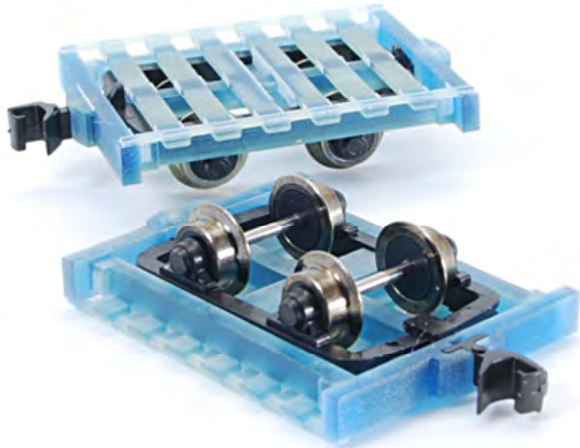
The Roco HOe wagon and chassis used by Jeroen for his Queensland style wholestick cane trucks.

The Printed Cane Truck

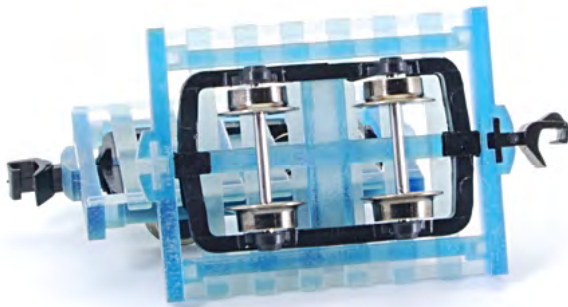
May 6, 2010 at 21:20: "About nine days ago I placed my second order of 3D-printed parts at Printapart.com and it just arrived this afternoon... wow, that's really quick and what a great service.

"The order consists of two wholestick trucks, that have been based on the models made by Greg Stephenson. I still needed to add more details like a winch and the nuts & bolts, but ordered a couple of them already to see if they would fit the little Roco HOe chassis.

"As you can see from the pictures below, it is a perfect fit. It simply slides on without having to cut-off any parts and it does not require any glue. Furthermore, I have added four holes for the vertical corner posts, which can be made of square (1x1 mm) brass or styrene."



The 3D printed model (printed model in blue) simply slips on over the Roco chassis (black) and is held in place by the coupler. This is the first trial run of the stereolithography printing, the model still requires winch and other details.



Bottom view of one wholestick truck (propped on the second truck) showing the fit with the Roco chassis.



The two trucks on their chassis and coupled together to test the distance between trucks for operation.

Jeroen invited members of the Yahoo AusNarrowGauge discussion group to review his rapid prototype 3D model. Part of the discussion centered on whether the model as above could be used in its own right, or whether it should be used as a casting master (presumably resin).

The printed models have a slightly rough surface as a result of the printing process, thus would need sealing and smoothing before being used as a

casting master. One suggestion was to use the 3D model as a master for a lost wax casting, which is smoother and would be a durable master for making rubber moulds for resin casting, preferably with an integral chassis.

Jeroen indicates that an order of 100 of these parts from Printapart would be roughly US\$4.50 per print. The Roco and the newly re-released Minitrains models cost about US\$7.50 each, for a total of about US\$12.00 for each wholestick truck.

Given the complexity of the model a two part casting mould would be required, otherwise the model would have to be broken into several parts, requiring more complex assembly.

Making an integral chassis would also require brass or acetal plastic pinpoint bearings for longevity and would offer the possibility of using Parkside Dundas or similar curly spoke wheels, as was common on some mill's wholestick trucks. They might not be visible on a loaded truck but would certainly add character to a rake of unloaded trucks.



The two HOOn30 wholestick trucks assembled on the Roco HOe chassis, fitted with stakes and painted with a gray undercoat.

To be continued...