THE MAKING OF A FLAT CAR

Presented by BOB VAN CLEEF of the North River Railway
A TYPICAL FLAT CAR

• The flat car is the simplest type of car to build yet it is also one of the least modeled car on layouts.
• True, there were relatively few on actual railroads however the most likely reason is that most flats tend to have derailment problems.
• This is often due to the fact they are underweight to NMRA standards.
BUILDING A HEAVY CAR IS EASY

• The secret? Build the car around brass bar stock.
• This view of a fifty foot flat car shows how the car was easily built around three ounces of bar stock.
• It ain’t pretty now but detail will be added later.
• A 50 foot flat can be built to weigh more than 9 ounces at a cost much less than using steel weight purchased from a hobby shop and is even heavier.
WHY BRASS?

• Brass is heavier than steel.
• It is easier to cut and to work with.
• Brass is readily available via mail order in several useful shapes.

• Metals Depot is an excellent source for raw metals.
• They have a large selection of sizes handy for home use.
• Metals are shipped without fancy wrapping. Ends have burrs and sharp corners.
• Cost however is much less than a hobby shop.
CAR DESIGN

This is the body of our model

- Flat cars were built in many various lengths and type
- Many shared the same *exact* underframe as box and other types of cars
- The dimensions of a PS-4 flat car are as follows:
  - 3’-8” railhead to deck
  - 53’-6” over end sills
  - 10’-6” width over floor
BRASS FOR WEIGHT

• Two sections of brass will be required to weight this car.
• The first is cut to fit between the truck bolsters.
• The second section is cut to bring the car up to its final weight.
• Glue Solder or join the two pieces together any way you want.
HOW MUCH BRASS?

• I personally use the obsolete NMRA standard as follows:
  o 1-1/2 ounces base weight for all cars
  o ½ ounce for every ten feet beyond 20 feet.
  o Thus, a 40’ foot car should weigh about 3-1/2 ounces.

• Weigh all parts of the car to determine how much brass is needed
• Don’t forget to include trucks, couplers and all metal parts.
• Thickness of stripwood used for the car sides will be selected to add to the width of the brass to bring the car width up to size.
MAKING BOLSTERS

- Bolsters are built up from stripwood.
- The jig is used to hold parts while gluing and is also used to sand bolster central to the car.
- This little tool has been used for dozens of cars.
- Note the wide bearing surface for truck.
BOLSTERS AND TRUCKS

• The wide bearing surface of the bolster and trucks makes for stable operation.
• Brass shims or washers can be used to adjust height
MORE HELP TOOLS

• Here are some of the other tools used for this car.
• They help space holes for grab irons, stirrup steps and other hardware from an edge.
• The drill guide (center) will be used to drill the holes for the stake pocket template.

Tools used for drilling various holes in this and other models.
FORMING THE CAR END

- A reasonably good-looking end sill is easy to make.
- Early end sills varied greatly on early cars.
- Modern cars all used the same exact configuration.
- Flat cars always approached the mounting of the brake wheel differently.
• Use cardstock for the socket base.
• Punch a hole for the socket body. Note that sockets varied greatly in diameter and depth on early cars.
• The pocket body is shown to lower left.
• The tool shown above makes handling small part like this much easier.
• Cut tubing to length and remove sharp edges
• Use a micrometer to measure length.
END SILL ASSEMBLY

- First drill the end sill.
- Glue the (cardstock) base of pocket to the sill.
- Notch the sill for the draft gear and drill holes of grab irons etc.
FILE ANGLE ON POCKET

- Pockets generally were angled at about 12 degrees to avoid slippage.
- This tool helps to position the file at the right angle.
TEMPLATE FOR STAKE POCKETS

- The fixture base (below) is used to make the template (middle).
- The drill guide is aligned with mark to drill each pair of holes.
- The template can then be used to drill the holes in the car side (above).
The template is now used to drill holes for the stake pockets. Note the flanges on the template to hold it in alignment with the top.
INSTALLING THE STAKE POCKETS

• Grandt Line  Stake Pockets w/Single U-Bolt  were used on this car.

• These parts are very small so it is best not to cut them from the sprue until just before gluing in place.

• Use an AC glue to hold in place.
ADDING THE DECK

- Simple scribed siding is used for the deck
- Notch in area of stack pockets before applying.
For More Information...

Metals Depot http://www.metalsdepot.com/
Small quantities of structural shapes of Steel, Brass and Aluminum cut to your specified length and quickly delivered. Useful for car weights or heat sinks.

Car Builders’ Cyclopedia available at http://www.Amazon.com
Great source for construction details. Various editions cover years from 1879 to 1957 and beyond
This presentation has been brought to you by the North River Railway

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THE END