

Building in Brass

A McKeen Motor Car

Motivation

Achievement Program

Master Builder Motive Power

Overview

- Background
- Research
- Construction
- Details
- Final Steps

Background

Where did the idea come from?

1st – Close to childhood home in SW Iowa

2nd – With father in Navy during WWII

1st

- William McKeen
 - Superintendent of Motive Power
 - Union Pacific Shops, Omaha, Nebraska
- 1905-1917, >150 cars to >50 railroads



William Riley McKeen, a trained mechanical and electrical engineer, is best known as the inventor of the McKeen Motor Car. Coming from a railroad family, he worked his way up to superintendent of motive power and mechanics for the Union Pacific Railroad. He had the complete confidence of railroad boss E. H. Harriman, at one time getting new shops built for over \$1 million.

When Harriman saw the need for a more economical way to transport passengers over branch lines, he called on McKeen to design a self-propelled rail car, which would be much cheaper to operate than the steam-engined passenger trains of the day. McKeen's design was a very streamlined shape which was powered by a gasoline engine (originally 100 horsepower, later 200 horsepower.)

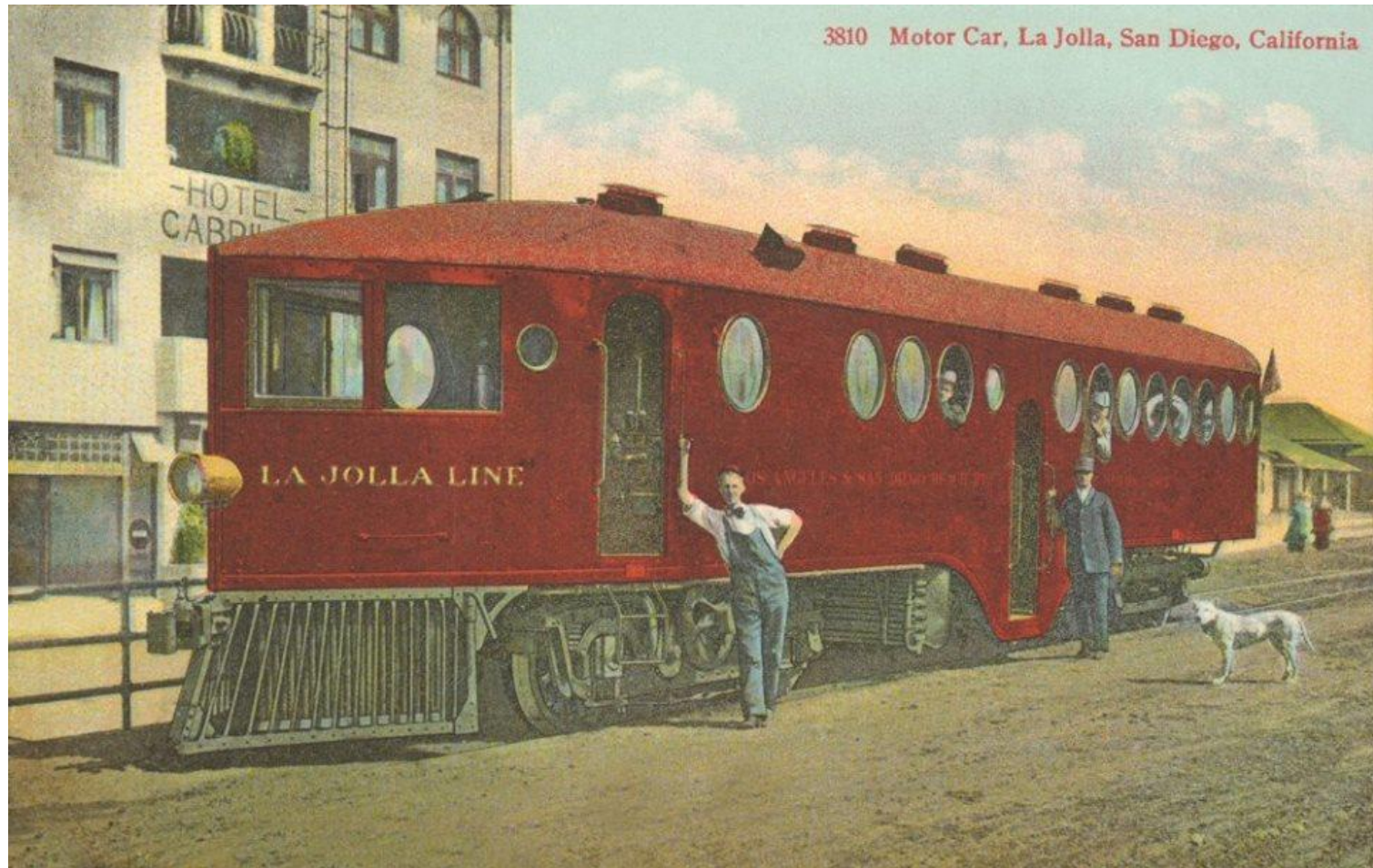
The standard McKeen Motor Car, with its distinctive porthole windows, carried 75 passengers. Inlaid mahogany, maple flooring and leather or rattan seat upholstery gave the interior an elegant appearance.

The concept was so successful that a separate company, the McKeen Motor Co. was formed to build the cars in a leased building in the Union Pacific shops. In 1906, 20 cars were shipped east to be used as demonstrators, which caused a great demand for more units. From 1905 to 1917 over 150 cars were built and sold to over 50 railroads across the country. The company was sold back to the Union Pacific in 1918. William McKeen ultimately retired to an avocado ranch in California where he died in 1946 at the age of 77.

Sources:

Vertical Files, Douglas County Historical Society Library Archives Center, Omaha Neb

2nd - La Jolla #1



Research

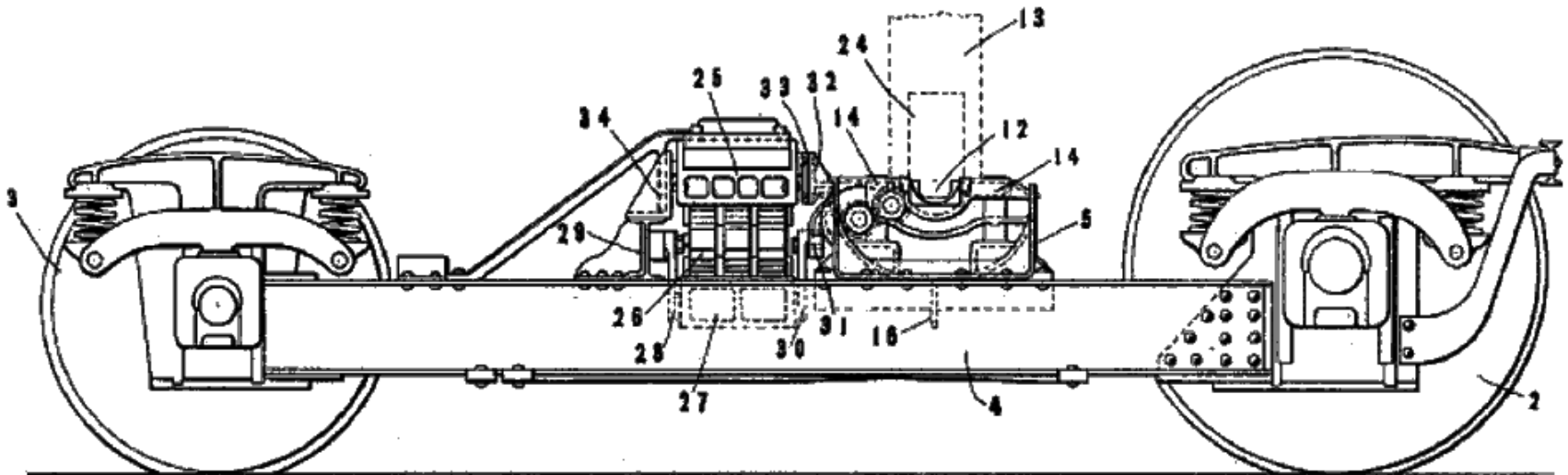
Patents

Drawings

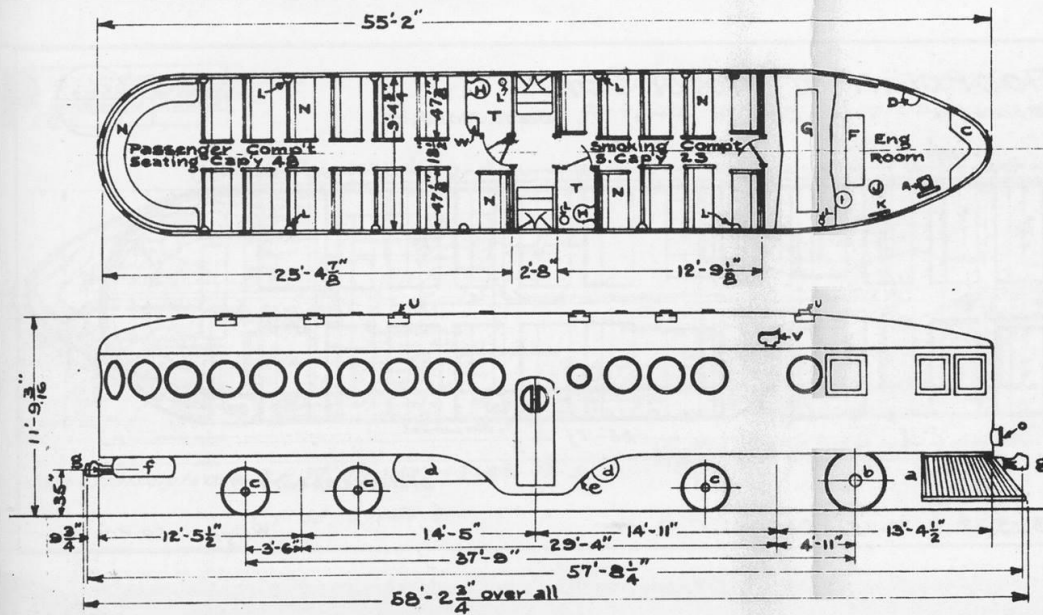
Photos

The motor truck (front)

From another Patent



The 55' McKeen



- A Auxiliary air compressor.
- C Battery & tool cabinet.
- D Sand box.
- E Engine compartment.
- F Trap doors.
- G 200 H.P. gasoline engine.
- H Hoppers.
- I Motorman's seat.
- J Brake & clutch actuating valve pedestal.
- K Hand brake.
- L Lamps.
- N Seats.
- O Headlight.
- P Passenger compartment.
- S Smoking compartment.
- T Toilet rooms.
- U Cottier ventilators.
- V Fresh air intake.
- W Drinking water cooler.
- a Pilot cooling radiator.
- b 42" steel tired driving wheel.
- c 33" Rolled steel wheels.
- d Air reservoirs- 3 per car.
- e Gasoline tank- cap'y 120 gallons.
- f Gas tank for lighting.
- g M.C.B. couplers.

Weight of car in working order	60000 lbs.
Length between pulling faces of couplers	57'-8 $\frac{1}{4}$ "
Length over end sills	55'-2"
Length of engine compartment	13'-8"
Length of smoking compartment	12'-9 $\frac{1}{8}$ "
Length of passenger compartment	25'-4 $\frac{7}{8}$ "
Width over side sills	9'-8"
Width over sheathing	9'-8 $\frac{1}{4}$ "
Width inside	9'-4 $\frac{3}{4}$ "
Width over all	10'-2 $\frac{3}{4}$ "
Height, top of rail to top of car (light)	11'-9 $\frac{3}{16}$ "
Height, floor to ceiling at center of car	7'-5 $\frac{1}{2}$ "
Seating capacity, pass. comp't. 48, smoking comp't. 23, total	71

McKEEN MOTOR CAR Co.

55 FT. PASS. & SMOKING CAR.
 OMAHA, NEB. Aug. 18, 1909.

Car #1 in La Jolla

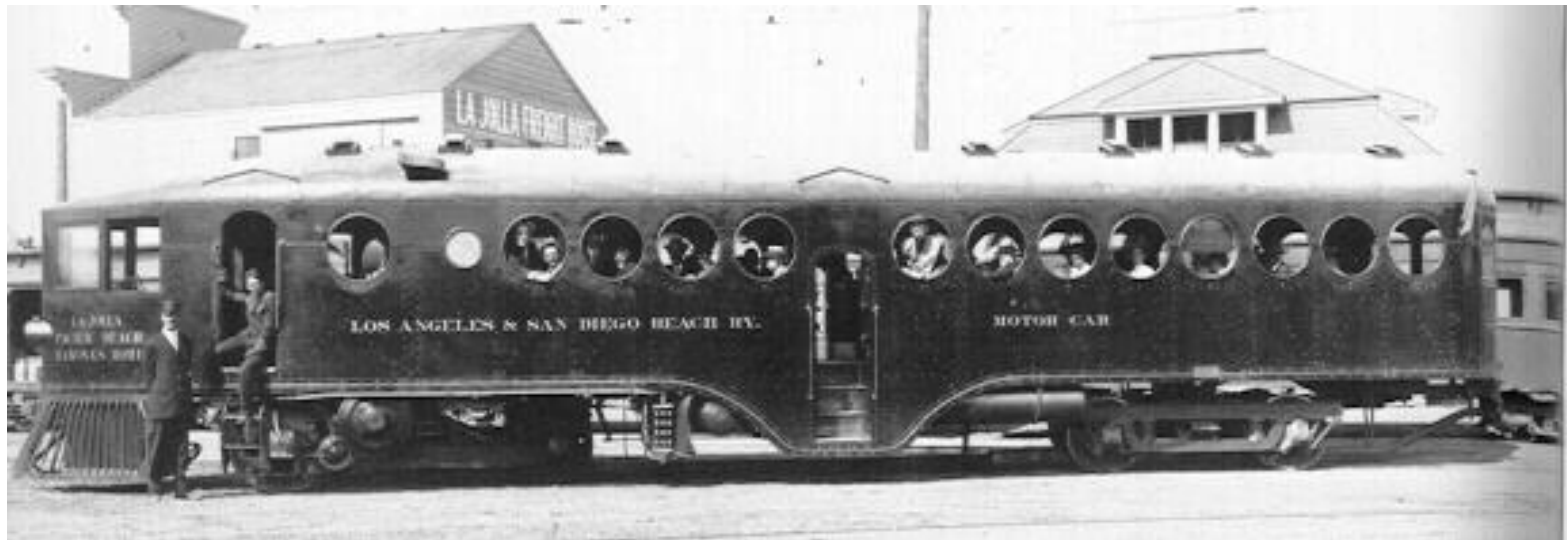


Car #2 at Omaha

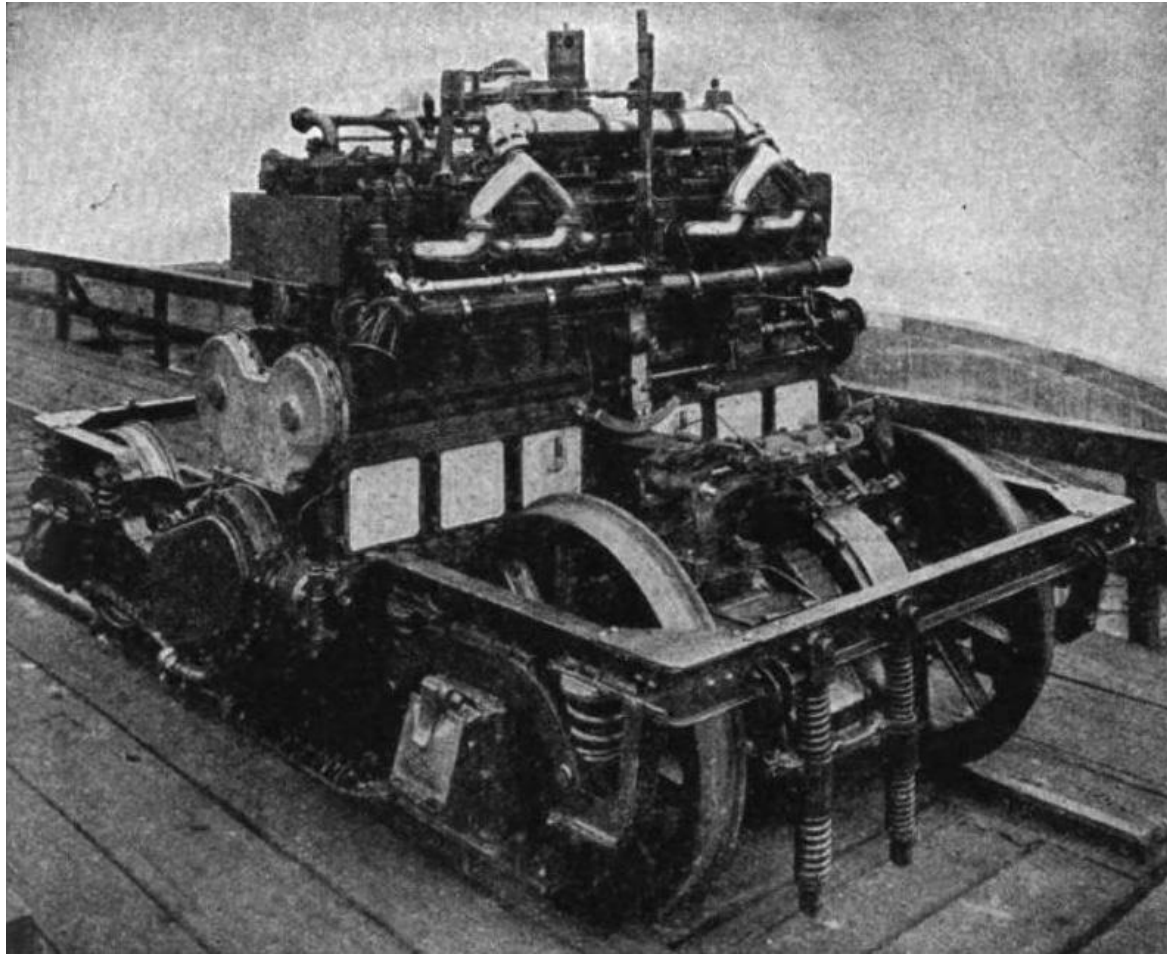


A Later Version

Name at front of car, Window arrangement,
Square back windows



The 'motor' truck



Construction

Tools

Materials

Jigs

Frame

Body

Roof

Tools



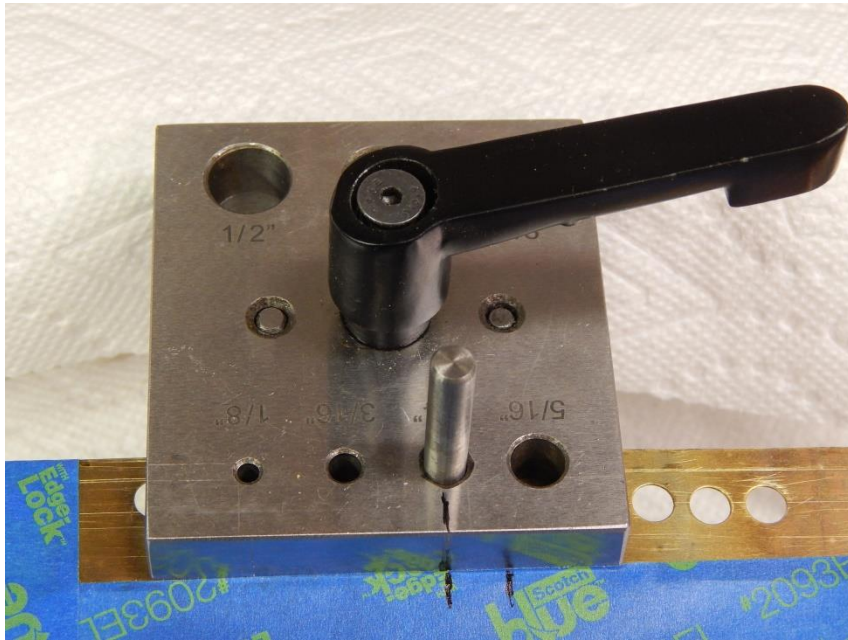
Materials



Jigs
&
Forming Fixtures

Jigs (Windows - 1)

Window Forming Die



Window Soldering Post



Jigs (Windows - 2)

On the Jig



Window Frame



Roof Forming Blocks



Roof Blocks w/Brass

Nose



Tail



Frame

Body

Roof

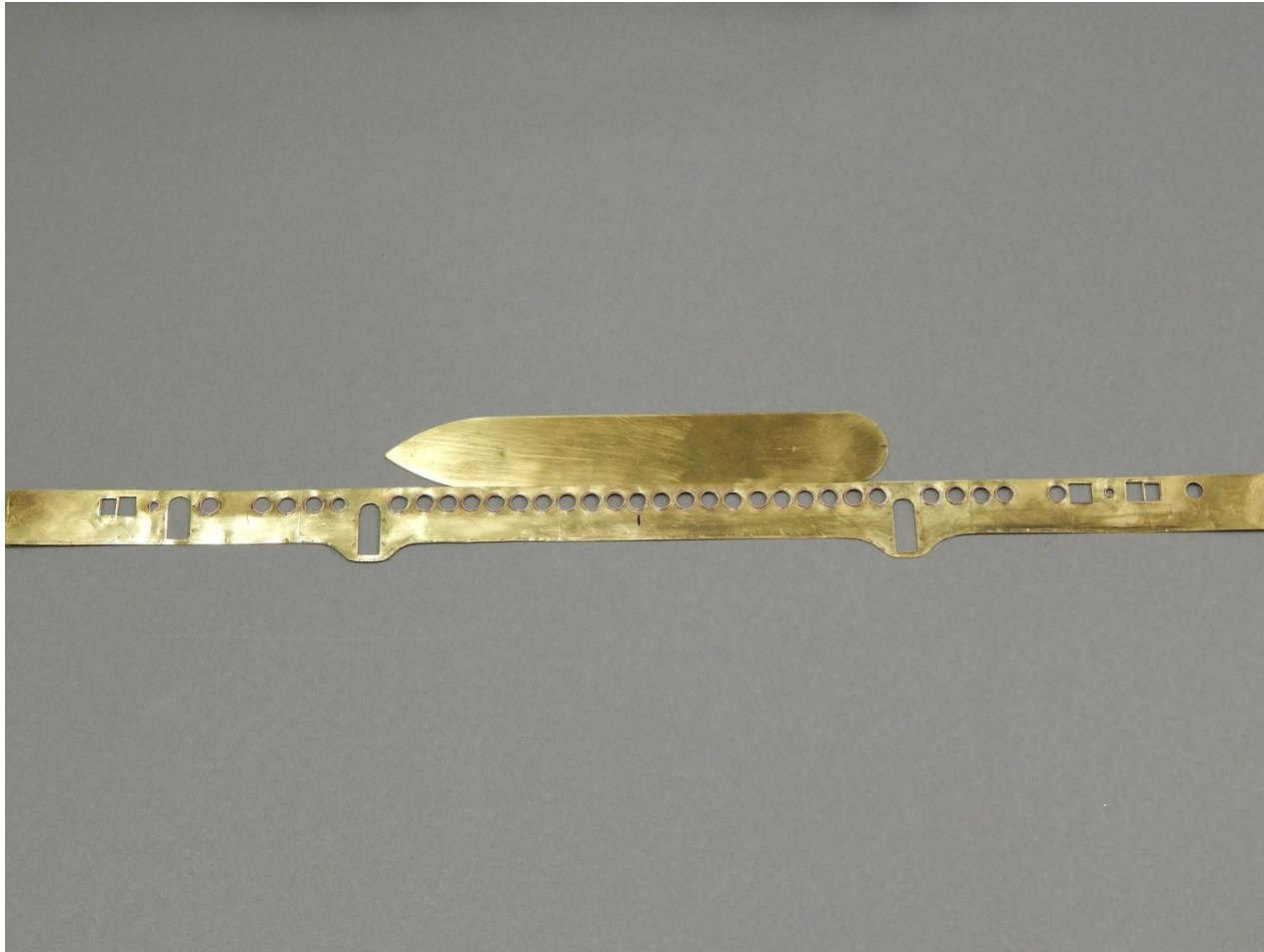
Early Frame



Body (Front Layout)



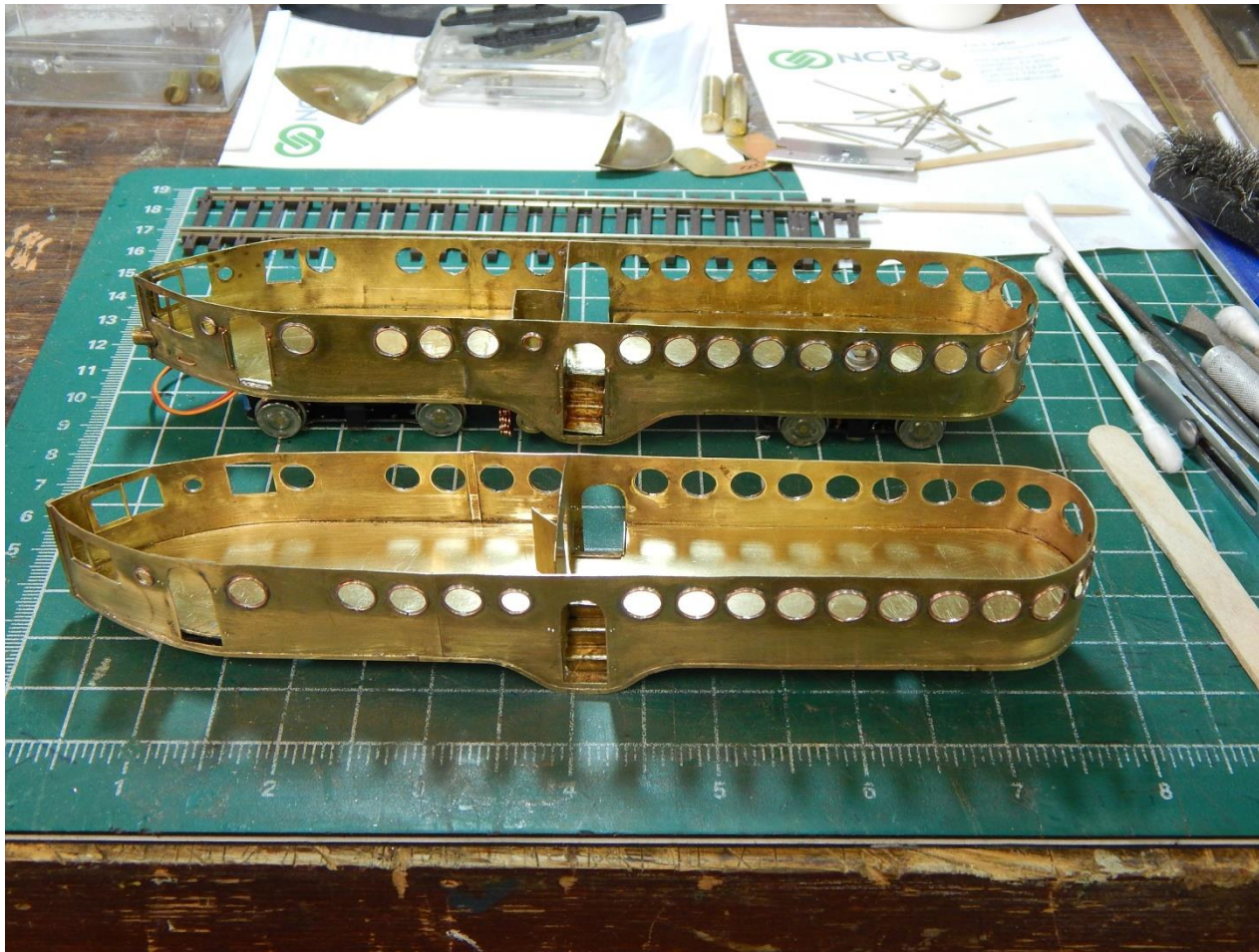
Full Body (w/frame)



Body (Fit to Frame)



Body (assemblies)



Roof

Nose



Tail



Detail

Radiators

Air Tanks

Stairs

Cow Catcher & Radiator

Whistle

Rear Coupler

Grab Irons

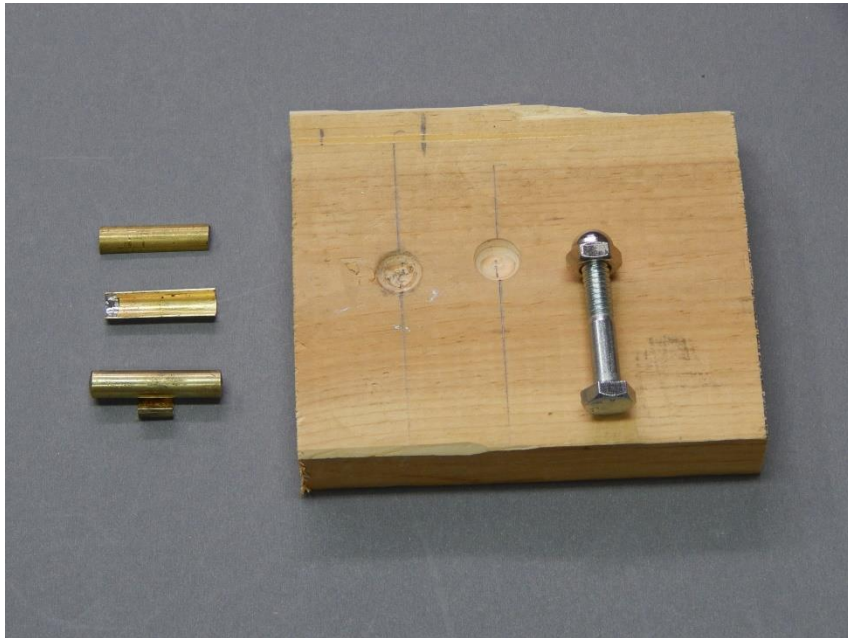
Rivets

Radiators



Air Tanks

Forming Die & Tool



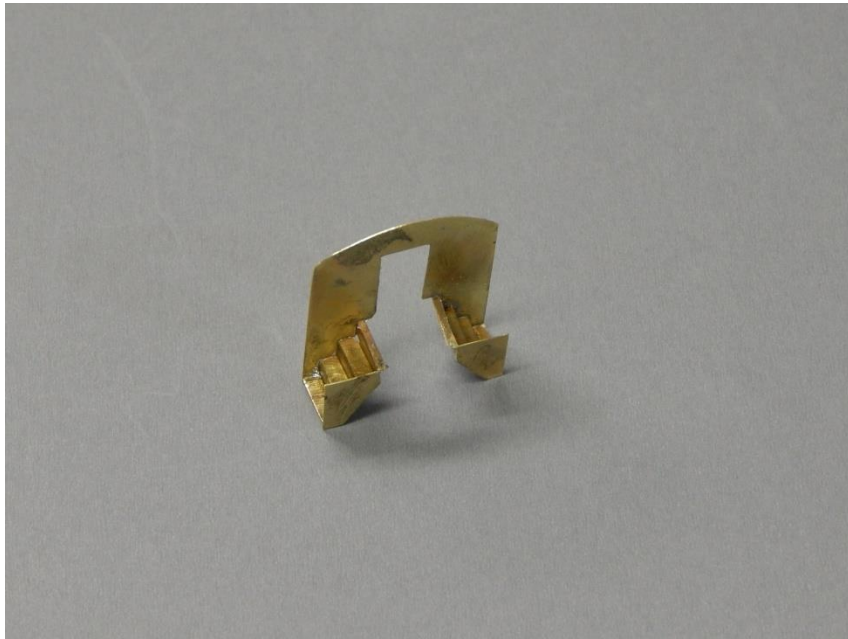
Domes & Hanger



Air Tanks (2)



Stairs

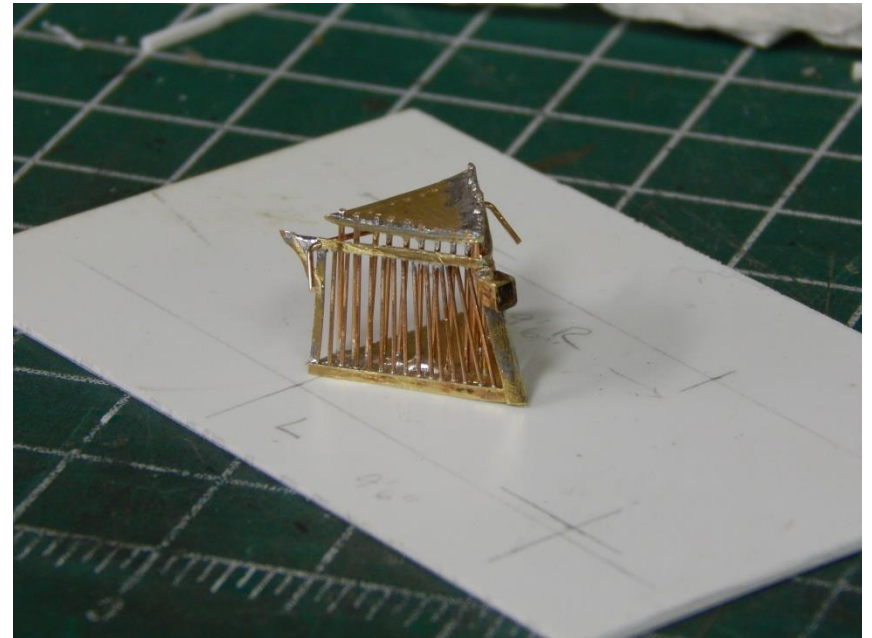


Cow catcher & Radiator

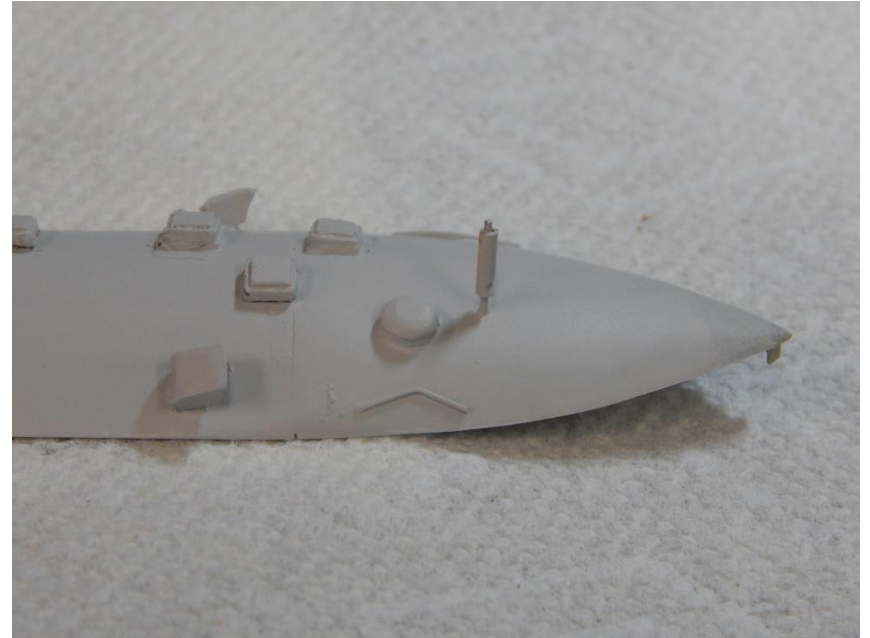
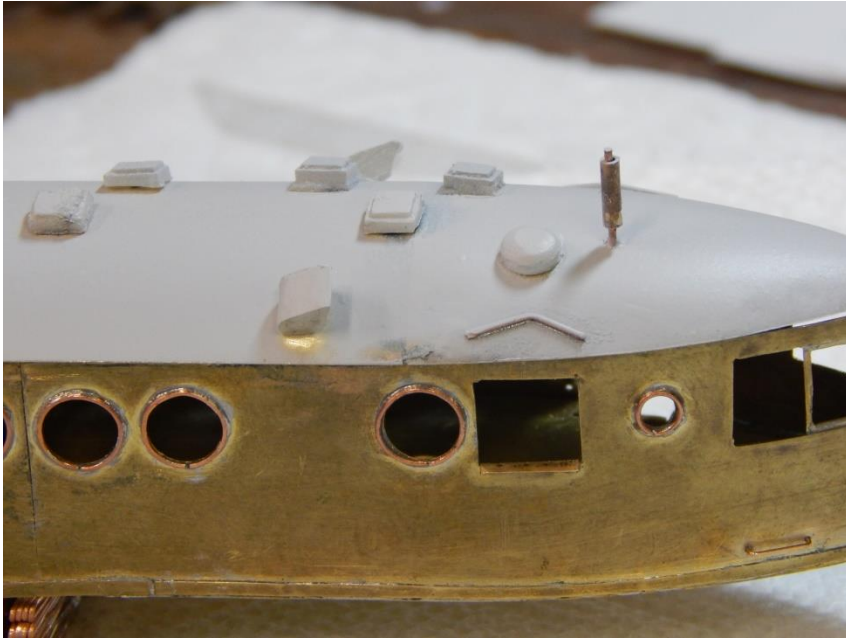
Mockup



Assembly w/radiator



Whistle



Rear Coupler



Grab irons

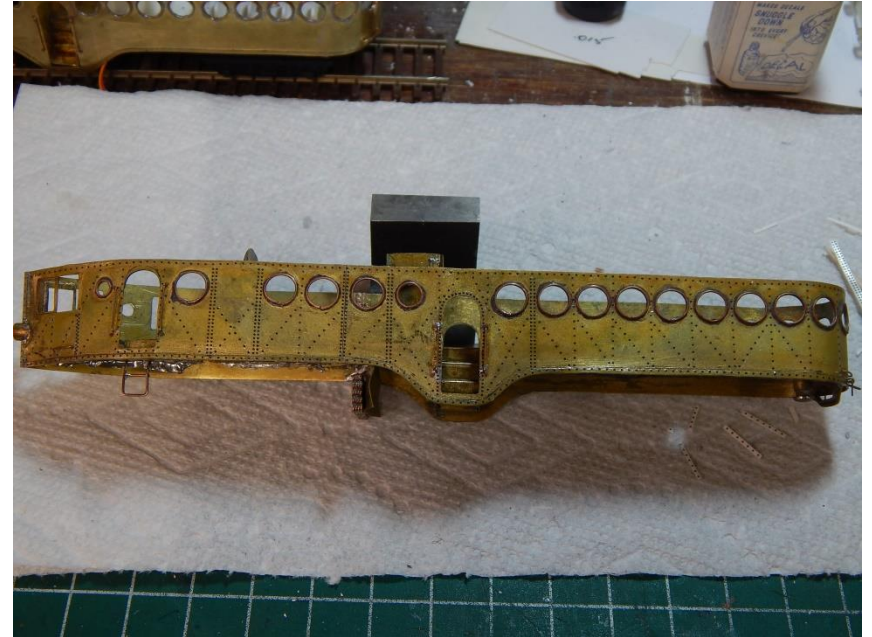


Rivets

Initial



Final full side



Final Steps

Etching

Complete Body & Top

Etching



Complete Body & Top

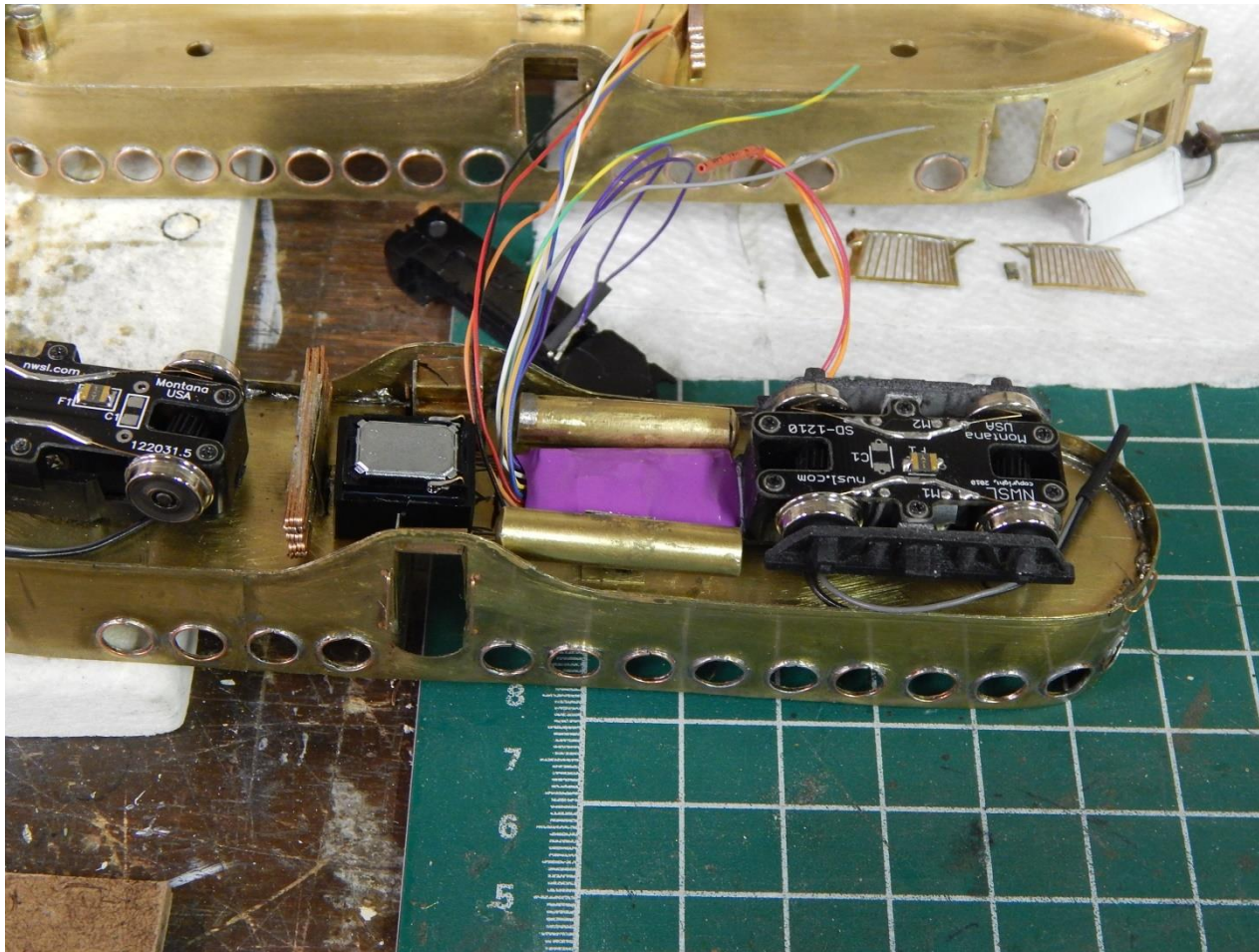
Before Painting



Extra – Finished Roof



Extra – Decoder & Speaker



'Afterview'

- Background
- Research
- Construction
- Detail
- Final Steps

Questions?