

IM 6 - INSIDE MOTION KIT - TYPE E - STELLA 2-4-0

Making the crank axle

First ream out the holes in both the cranks and the eccentrics so that they are a tight fit on the axle. Then carefully open out the small holes in the eccentrics, preferably with a small taper broach, so that the 0.45mm wire is a force fit in the holes.

Check the fit of the eccentric sheaths (part 122) on the eccentrics. Cut a small notch to fit the 0.45mm wire in the web of the cranks. The crank and eccentrics can now be pinned together with a short piece of 0.45mm wire.

The cranks and eccentrics together with the eccentric sheaths are now force fitted on the axle with the cranks set apart by a distance which corresponds to the cylinder holes in part 128 (3.25mm) and with the right side crank leading by 90 degrees. The correct spacing is achieved by using the spacing washer, part 139.

When you are satisfied with the setting of all the components carefully silver solder the cranks and eccentrics to the axle. The eccentric sheaths must of course remain free. Now very carefully remove the axle between the crank webs. A carborundum disc in a mini drill works well and allows very gentle pressure to be used. We suggest you don't use a hacksaw!

The axle bearings will need to be filed back so that there is clearance for the cranks with a little side play on the axle.

Cylinders

Parts 128 & 134 have a half-etched line running down two edges. File back to the half etched line if you are modelling in EM gauge. Bend the slide bars at right angles and fit to the cylinder block front (part 128) so that the valve rod holes align and the slide bars with the half etched dimples are upwards.

Fit lengths of 1/16" outside diameter brass tube for the cylinders so that they are perpendicular to the cylinder front and protrude by 1mm. Detail the cylinder fronts by attaching piston rod glands (parts 135 & 136) and valve rod glands (part 133) using 0.45mm wire to help alignment and represent the bolts.

Fix the mounting bracket (part 129) in place so that the tab fits in the slot in part 134 and the cylinders will be inclined at the correct angle - use the drawing as a guide. Tap the small hole in the mounting bracket (part 129) 10 BA. Check fit of assembly between frames attaching it with the 10 BA screw.

Crossheads and connecting rods

Bend the crosshead slipper (part 138) and solder the crosshead faces (part 137) in place on the small tabs. The completed crosshead should now be a nice close fit on the slidebars with minimal slop. Repeat for the other crosshead.

Cut the steel piston rod wire in half. Solder a 1mm length of the cylinder tube to the end of each piece of wire. Insert the piston rod into the cylinder and push it half way in, slide on the crosshead and insert the piece of tubing on the rod between the small projections at the front of the crosshead. Carefully solder the rod to the crosshead and check the assembly for free but not sloppy movement.

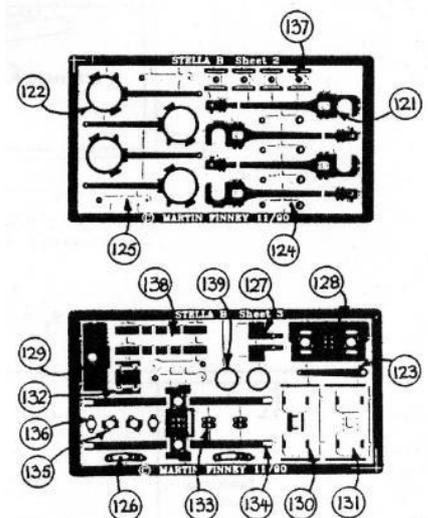
Form the joggle in the connecting rods (part 121) with the fold lines inside to make the fork around the crosshead. Solder the rods together after first fitting them over the cranks. Attach the connecting rods to the crossheads using 0.7mm wire as pins. Now fit the crank axle and cylinder assembly and check that everything works with no binding.

ETCHED COMPONENTS - 0.020" nickel silver

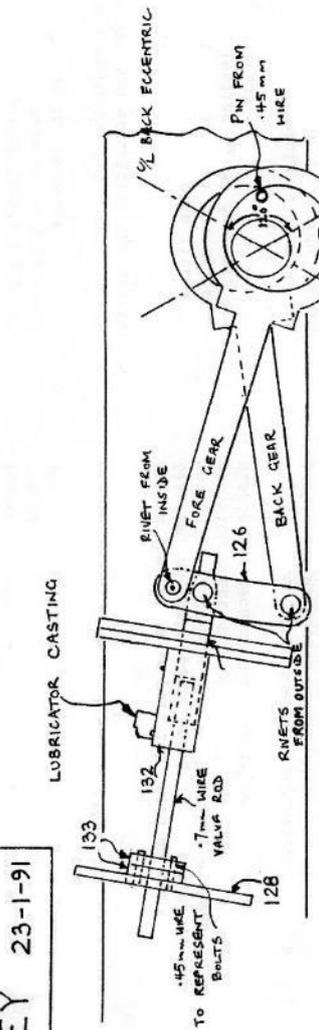
- 121 Connecting rod - (4)
- 122 Eccentric sheath - (4)
- 123 Reversing lever
- 124 Reversing arm - (4)
- 125 Lifting link - (4)
- 126 Expansion link - (2)
- 127 Valve rod - (2)
- 128 Cylinder block front
- 129 Cylinder block mounting bracket
- 130 Motion bracket - front lamination
- 131 Motion bracket - rear lamination
- 132 Valve rod guide box
- 133 Valve rod gland - (2)
- 134 Slide bar assembly
- 135 Piston rod gland inner overlay - (2)
- 136 Piston rod gland outer overlay - (2)
- 137 Crosshead face - (4)
- 138 Crosshead slipper assembly - (2)
- 139 Washer - to space out eccentrics - (3)

OTHER COMPONENTS

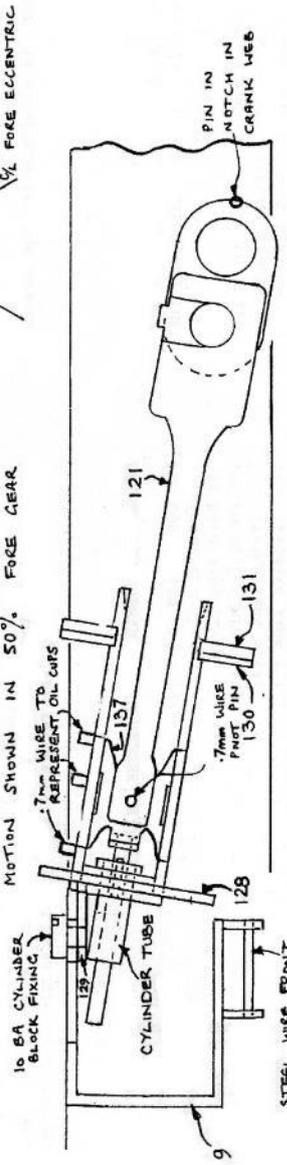
- 1/16" outside diameter brass tube for cylinders
- Steel wire - 0.8mm - for piston rods
- Rivets - (6)
- Brass wire - 0.7mm - for crosshead pins and lifting links
- Brass wire - 0.45mm - for pinning eccentrics to cranks
- 10 BA screw
- Brass wire - 0.9mm - for reversing cross shaft
- Cast manganese bronze cranks - (2)
- Brass eccentrics - (4)
- Lubricator casting



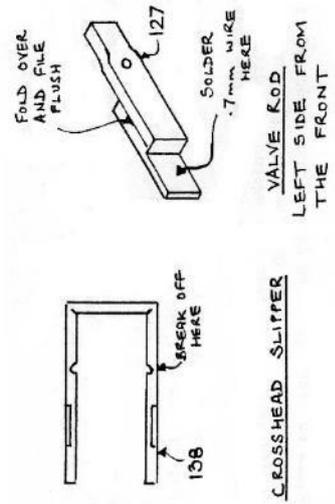
CWR 'STELLA' 2-4-0
 INSIDE MOTION
 MARTIN FINNEY 23-1-91



SECTION FROM Y SHOWING LEFT SIDE VALVE GEAR.

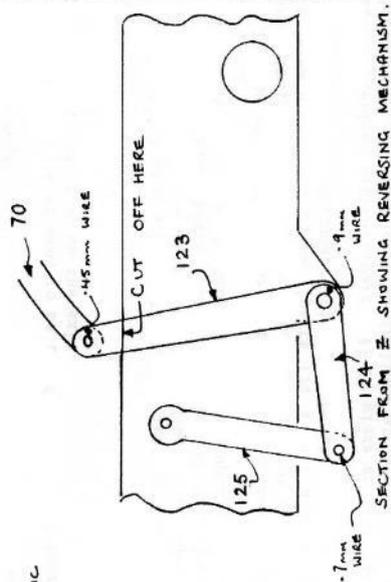


SECTION FROM X SHOWING LEFT SIDE MOTION.

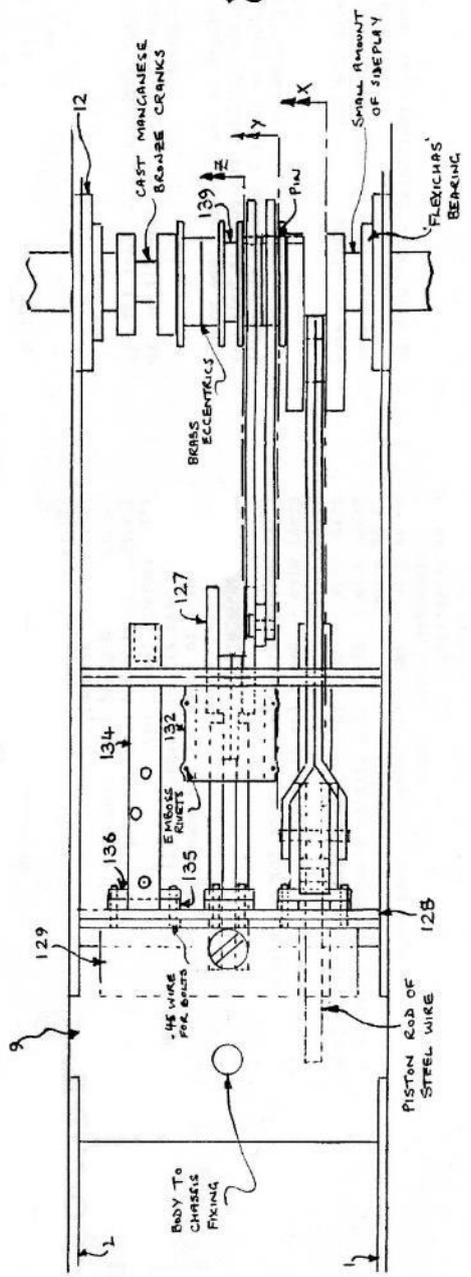


CROSSHEAD SLIPPER

VALVE ROD
 LEFT SIDE FROM
 THE FRONT



SECTION FROM Z SHOWING REVERSING MECHANISM.



SCHEMATIC DRAWING SHOWING THE ARRANGEMENT OF THE REVERSING MECHANISM.