INSIDE MOTION KIT – TYPE B – ABERDARE

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 on the eccentrics. The fit is improved if the eccentrics are reduced in thickness. This can be achieved by rubbing the eccentrics on a sheet of emery paper.

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 64 and with the right side crank leading by 90°. It may help the spacing of the cranks to make a spacer to fit between the eccentric pairs.

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.

How 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. I suggest you don't use a hacksaw!

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

Cylinders

Parts 63, 64, 65 and 66 have a half-etched line running down two edges. File back to the half etched line if you are modelling in EM gauge.

Check the fit of the slide bars (part 66) in the holes in part 64. File the edges of the slide bars to get a good fit. Bend the slide bars at right angles and fit to the cylinder block front (part 64) so that the valve rod holes align and the slide bars with the three half-etched dimples are upwards. Fit 10 mm lengths of 1/16" outside diameter brass tube for the cylinders so that they are perpendicular to the cylinder front and protrude by 1½ mm.

Detail the cylinder fronts by attaching cylinder covers (part 70) and piston rod glands (part 69) using 0.45mm wire to represent the studs.

Fix the mounting bracket (part 63) so that the tab fits in the slot in part 66 and the cylinders will be inclined at 1 in 6. Use the drawing as a guide. Tap the small hole in the mounting bracket 10 BA and attach it to part 9 with a screw. Check fit of assembly between frames. When satisfied, solder spacer 9 in position.

Crossheads and connecting rods

Lay a crosshead face (part 67) face down on a piece of balsa wood or similar and push the spike of a slide shoe (part 66) through the slots provided, have the half etched surface of the spike facing toward the centre of the crosshead. Insert the other slide and check they are parallel and the correct distance apart using the slide bar as a gauge. You should aim for a nice close fit with minimal slop. When satisfied, flow solder well into the slots so that they cannot be seen after the spikes have been snapped off and the joint cleaned up. Repeat for the other crosshead face.

Cut the steel piston rod wire in half. Solder a 2mm 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.

File the U-shaped bearings in the connecting rods (part 56) until they are a free fit on the cranks. Form the joggle in the rods with the fold lines inside so that a pair of rods back to back will clear the crosshead. Solder the rods

together after first fitting them over the cranks. Attach the connecting rods to the crossheads using .45mm wire as pins.

Now fit crank axle and cylinder assembly and check that everything works with no binding.

Motion bracket and valve gear

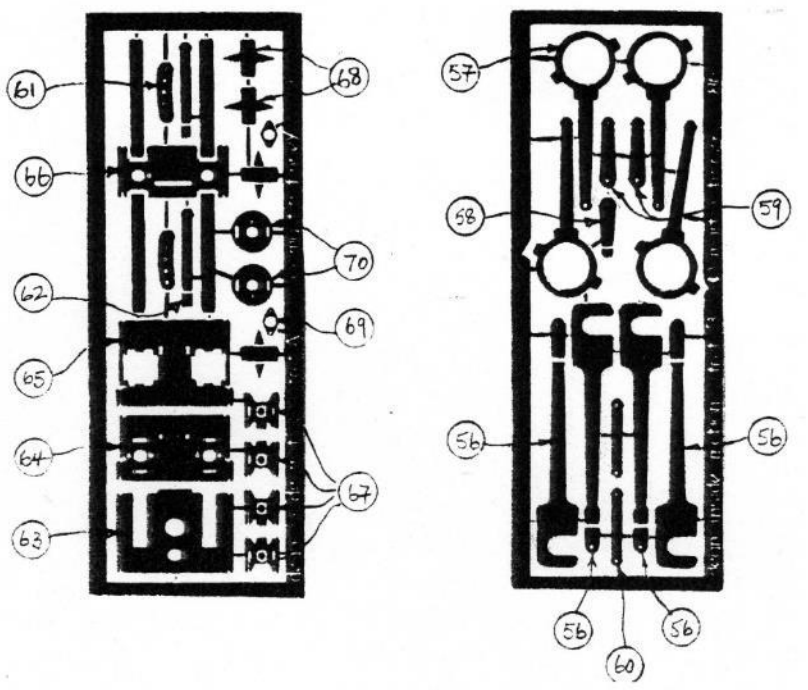
Check the fit of the valve rods (part 62) in the small rectangular holes in the motion plate (part 65). File the edges of the valve rods until you get a good fit.

Fit the motion bracket into the half etched grooves in the slide bars. Before soldering in position check the crosshead clearance. Solder short lengths of 0.45mm wire into the dimples in the slidebars to represent the oil cups.

Splice a piece of 0.45mm wire to extend the valve rods and form the joggle as shown in the diagram. Rivet the eccentric sheaths, expansion links (part 61) and valve rods together paying particular attention to the direction of the rivets - see diagram. Make the right side a mirror image of the left.

Thread the crank axle assembly into the cylinders and check that everything works. Success? Relax and enjoy the motion!

Finally using the diagrams assemble and fix the reversing mechanism. The two remaining rivets are used to attach part 59 to part 60.

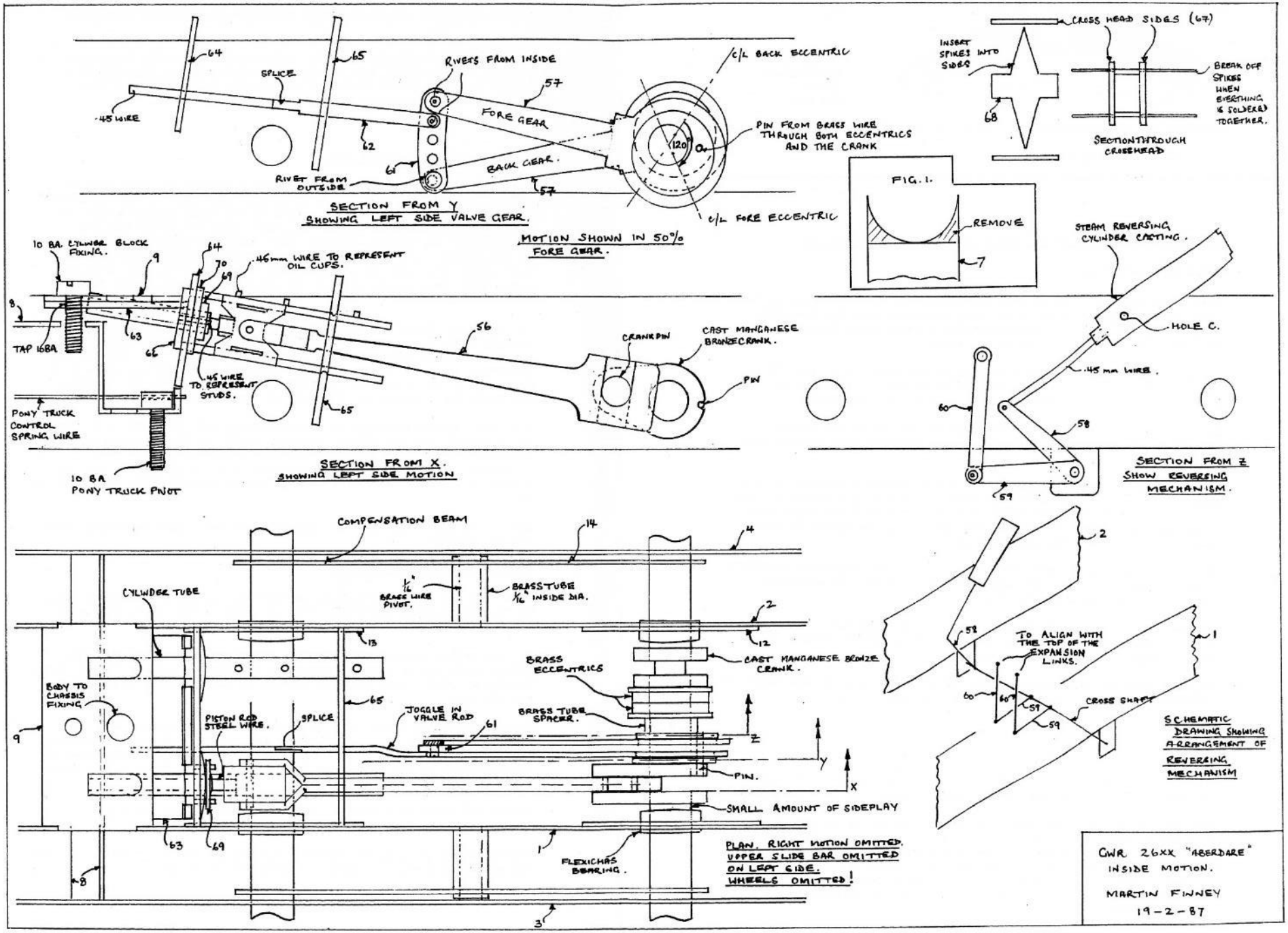


ETCHED COMPONENTS

56. Connecting rod - (4)
57. Eccentric sheath - (4)
58. Lever - Reversing cylinder to cross shaft
59. Lever - Cross shaft to part 60 - (2)
60. Link - Eccentric link to part 59 - (2)
61. Expansion link - (2)
62. Valve rod - (2)
63. Mounting bracket
64. Cylinder block front
65. Motion bracket
66. Slide bar assembly
67. Crosshead face - (4)
68. Crosshead slide shoe - (4)
69. Piston rod gland - (2)
70. Cylinder cover - (2)
71. Compensation beam packing strip

OTHER COMPONENTS

1/16" outside diameter brass tube for cylinders
Steel rod for piston rod
Rivets - (8)
Brass wire – 0.45mm - for crosshead pins and valve rods
10 BA CH screw
Brass wire - 0.9mm - for reversing cross shaft
Cast manganese bronze cranks - (2)
Brass eccentrics - (4)


64
65
SPLICE
RIVETS FROM INSIDE
57
c/L BACK ECCENTRIC
45 WIRE
62
FORE GEAR
61
BACK GEAR
RIVET FROM OUTSIDE
57
120°
PIN FROM BRASS WIRE THROUGH BOTH ECCENTRICS AND THE CRANK
c/L FORE ECCENTRIC
SECTION FROM Y
SHOWING LEFT SIDE VALVE GEAR.
MOTION SHOWN IN 50% FORE GEAR.
CROSS HEAD SIDES (67)
INSERT SPIKES INTO SIDES
68
BREAK OFF SPIKES WHEN BYBTHING & SOLDERED TOGETHER.
SECTION THROUGH CROSSHEAD
FIG. 1.
REMOVE
7
10 BA. CYLINDER BLOCK FIXING.
9
64
70
69
.46mm WIRE TO REPRESENT OIL CUPS.
8
TAP 10BA
63
66
.45 WIRE TO REPRESENT STUDS.
56
CRANKPIN
CAST MANGANESE BRONZE CRANK.
PIN
65
PONY TRUCK CONTROL SPRING WIRE
10 BA PONY TRUCK PIVOT
SECTION FROM X.
SHOWING LEFT SIDE MOTION
STEAM REVERSING CYLINDER CASTING.
HOLE C.
.45 mm WIRE.
60
58
59
SECTION FROM Z
SHOW REVERSING MECHANISM.
COMPENSATION BEAM
14
4
CYLINDER TUBE
1/16" BRASS WIRE PIVOT.
BRASS TUBE 1/16" INSIDE DIA.
2
13
12
CAST MANGANESE BRONZE CRANK.
BRASS ECCENTRICS
BODY TO CHASSIS FIXING
9
65
JOGGLE IN VALVE ROD
BRASS TUBE SPACER.
PISTON ROD STEEL WIRE.
SPLICE
61
Z
Y
X
PIN.
SMALL AMOUNT OF SIDEPLAY
63
69
1
FLEXICHAS BEARING.
8
3
PLAN. RIGHT MOTION OMITTED. UPPER SLIDE BAR OMITTED ON LEFT SIDE. WHEELS OMITTED!
2
52
TO ALIGN WITH THE TOP OF THE EXPANSION LINKS.
1
60
60
59
59
CROSS SHAFT
SCHEMATIC DRAWING SHOWING ARRANGEMENT OF REVERSING MECHANISM
CWR 26XX "ABERDARE" INSIDE MOTION.
MARTIN FINNEY
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