
Swivel Crane, Welsh Slate Museum Gilfach Ddu, Llanberis



GAT Project No. G1779

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Swivelling Crane, Welsh Slate Museum, Gilfach Ddu, Llanberis

Certain components of this crane are in poor condition and in need of repair and conservation. A record of the crane was required before any works should commence. Gwynedd Archaeological Trust were commissioned by the National Museums and Galleries of Wales to make this record.

Method

The crane has a timber frame with wrought and cast iron fittings. It occupies a triangular footprint 7m by 6.5m by 8m (horizontal stabilising beams) and stands 5m high. The jib is now detached from its seating on the crane. The total length of the timber component is 9.05m although a small portion (about 170mm) of the lower end had already broken and a new tenon (also broken) had been cut with the intention of reseating the jib. The metal wheel and fittings at the hook end measures a further 433mm).

The crane was measured and partly drawn on site and a full photographic reference record was made using a Nikon 5700 digital camera (196 views). Drawings were made on computer at 1:1 scale for reproduction at 1:10, 1:20 and 1:50 scales.

The following figures represent the drawn record

- Fig. 1 Ground plan showing position of crane in relation to stabilising beams (scale 1:50)
- Fig. 2 Elevation showing jib in place (scale 1:50)
- Fig. 3 Elevations, front and left side (scale 1:20)
- Fig. 4 Front of crane, detail (scale 1:10)
- Fig. 5 Back of crane, detail (scale 1:10)
- Fig. 6 Crane, left side, showing fixing arrangements for base of jib (scale 1:10)
- Fig. 7 Crane right side, detail (scale 1:10)
- Fig. 8 The crane gearing
- Fig. 9 Stabilising beams, pegged in at ends (scale: 1:10)
- Fig. 10 Pulley at top of crane and stabilising bars (scale 1:10)
- Fig. 11 The base of the crane and the fixing arrangements for the stabilising beams (scale 1:10)
- Fig. 12. Jib details at hook end (scales 1:20 and 1:10)

Fig. 1 Ground plan showing position of crane in relation to stabilising beams
(scale 1:50)

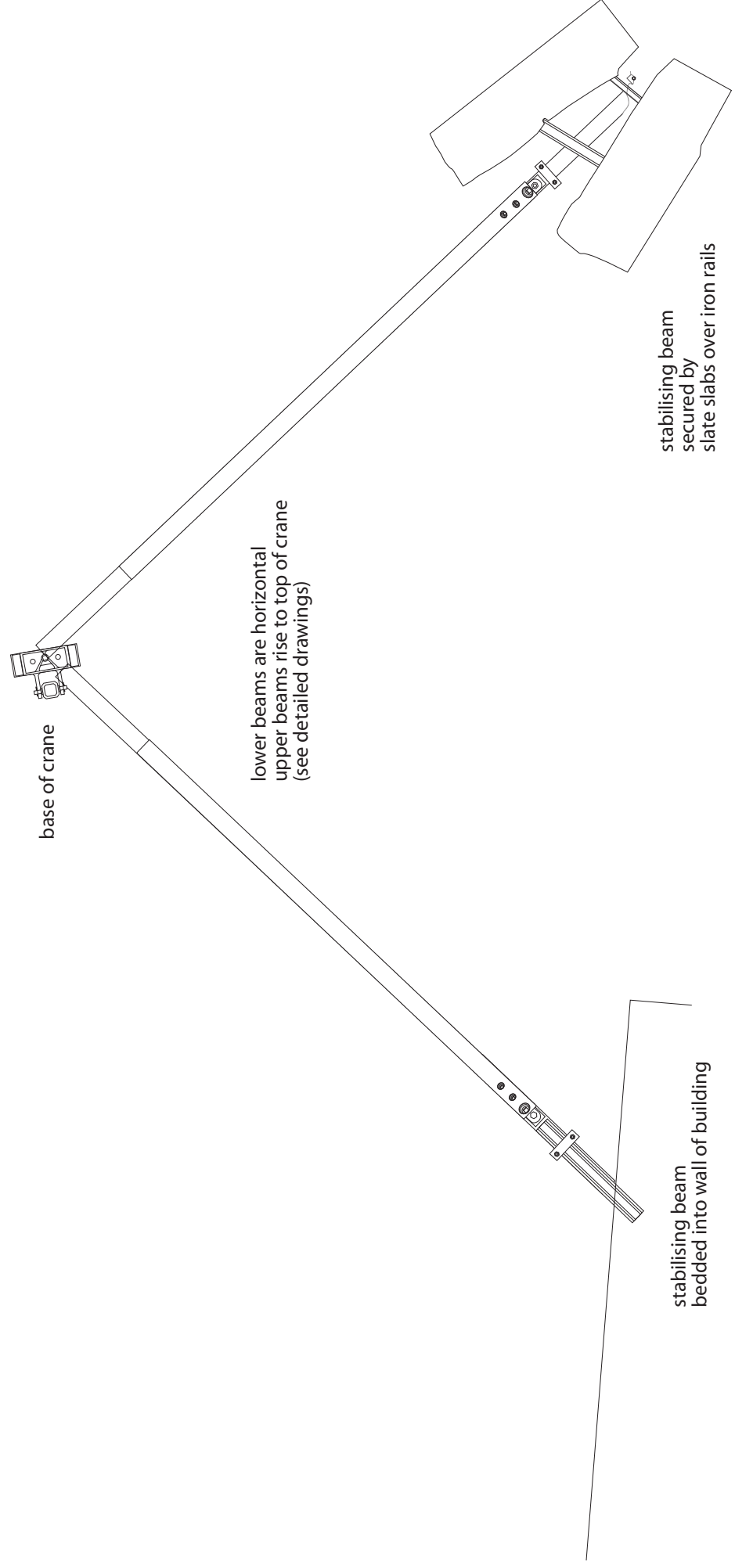


Fig.2 Elevation showing jib in place
(scale 1:50)

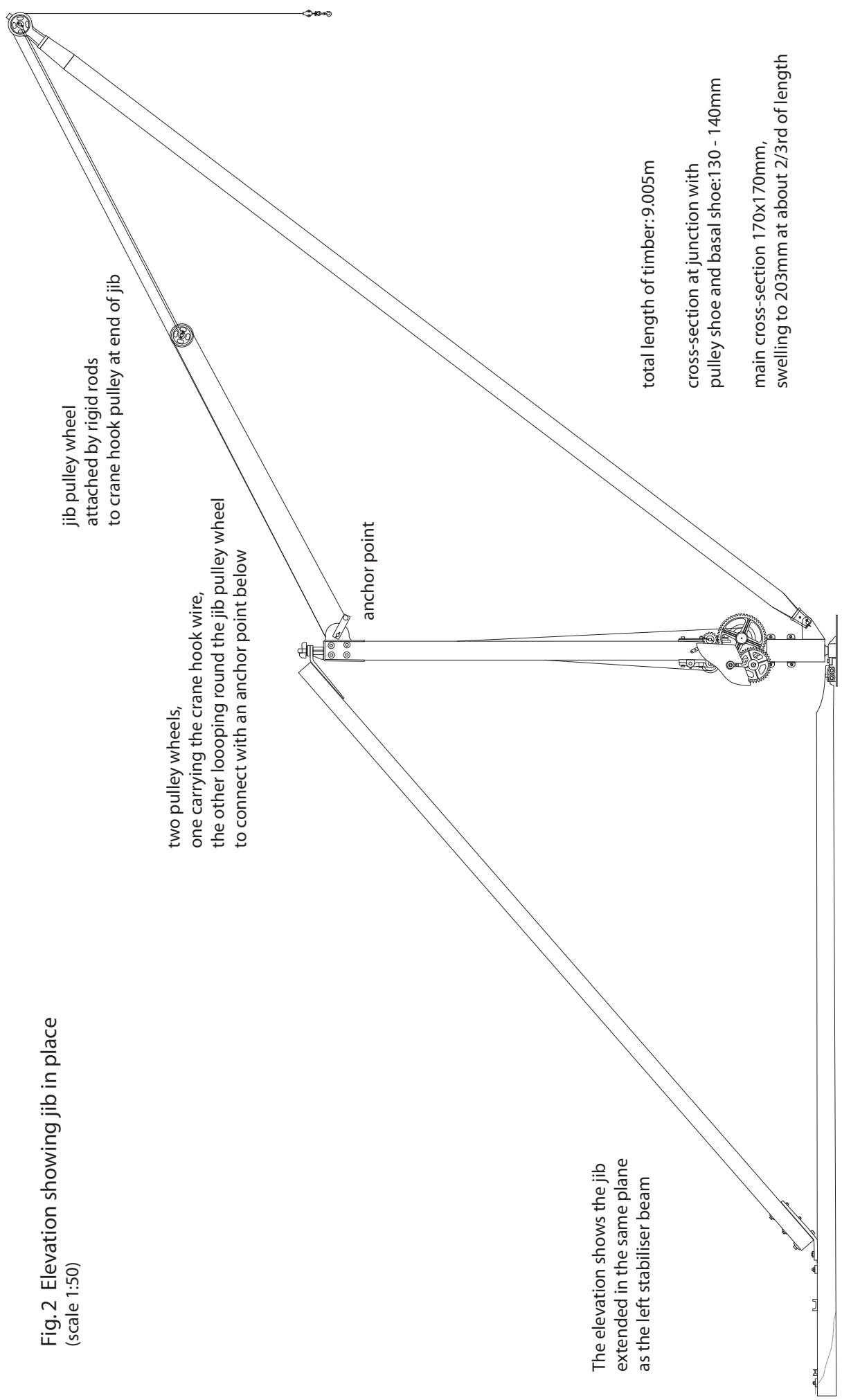


Fig.3 Elevations
(scale 1:20)

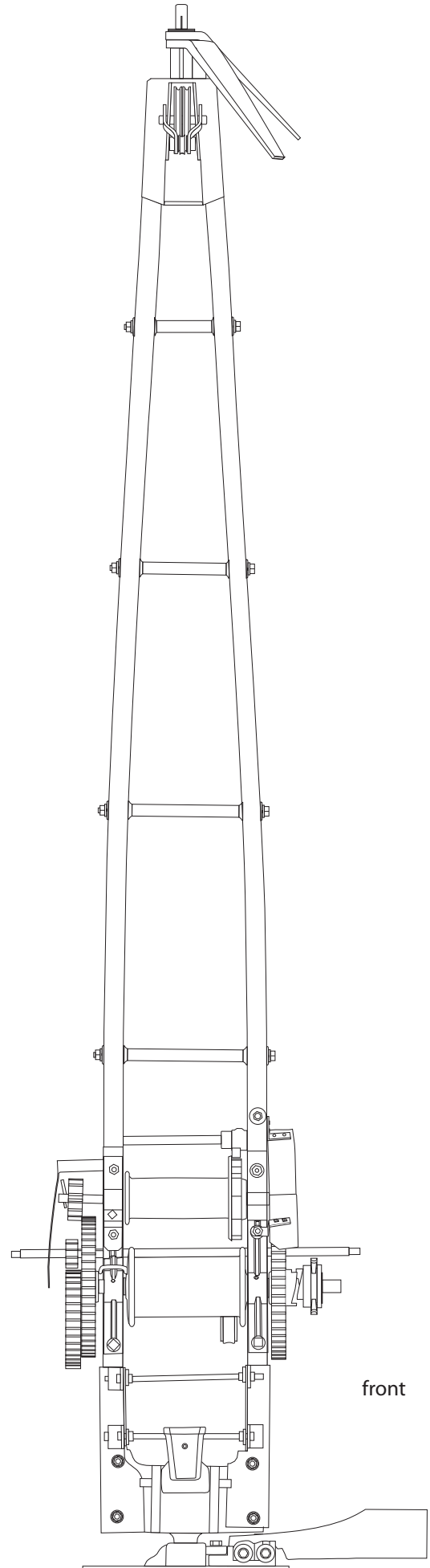
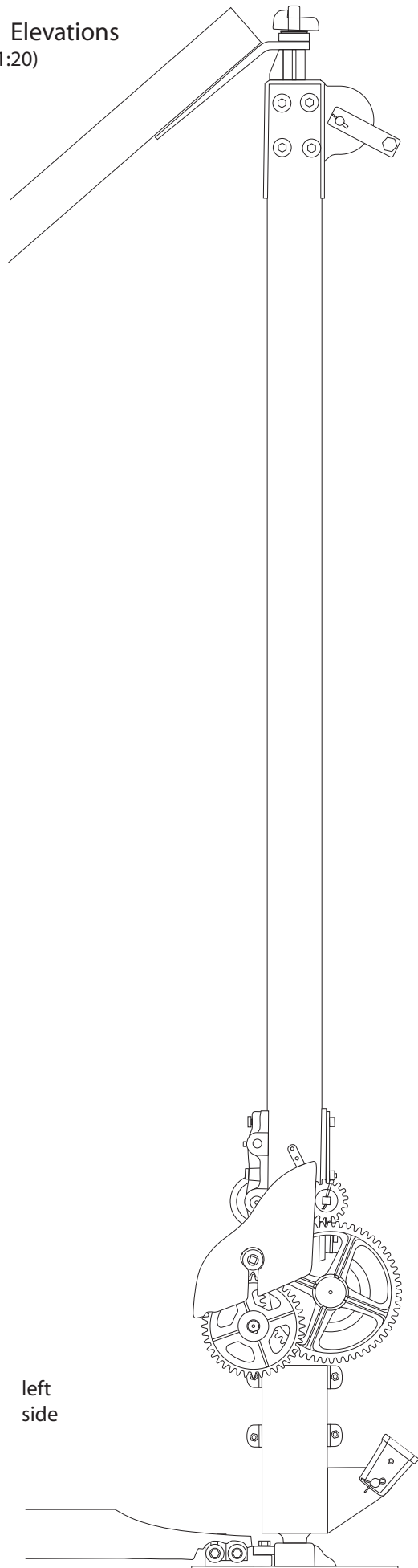


Fig. 4 Front of crane, detail
(scale 1:10)

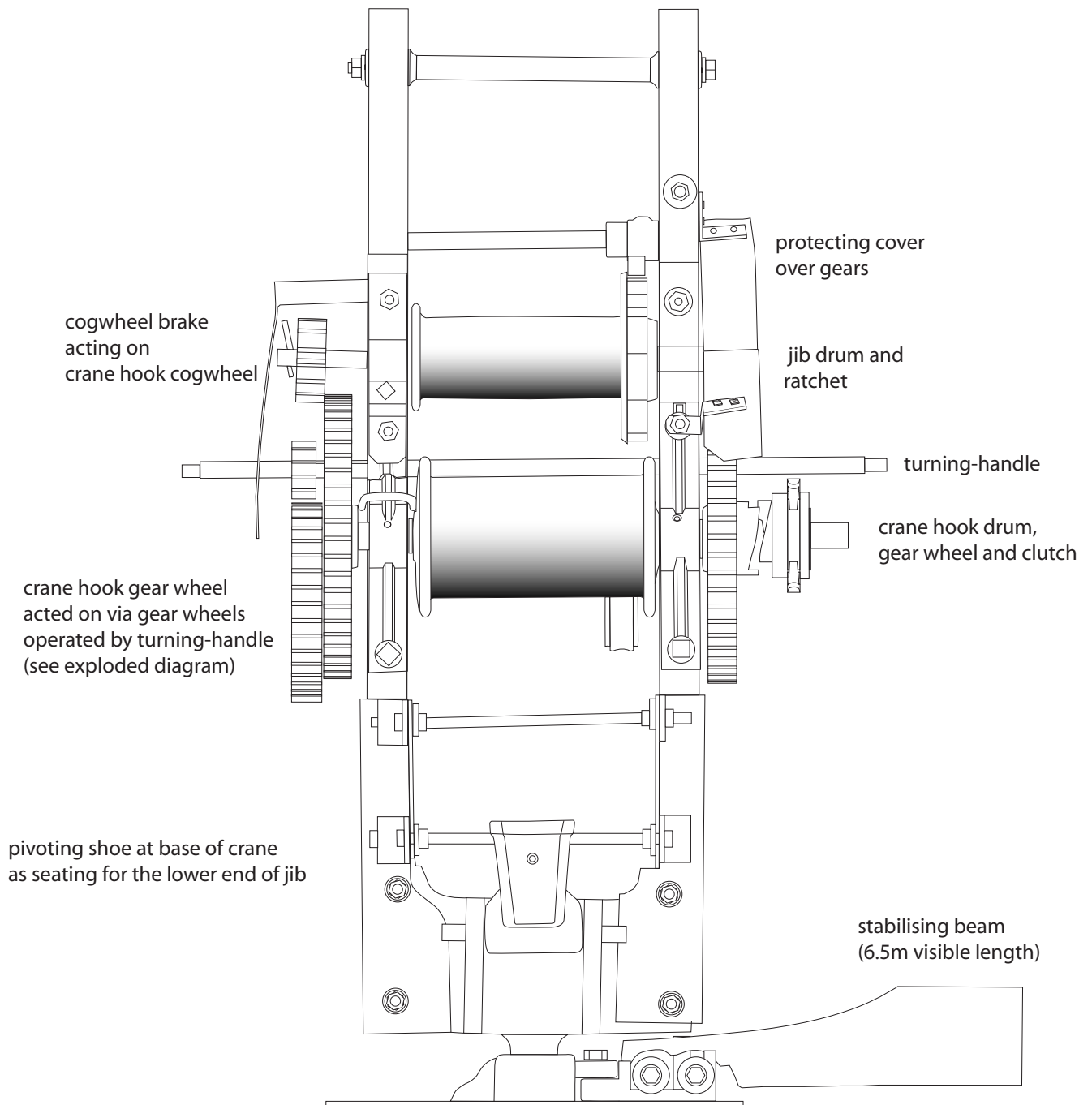


Fig. 5 Back of crane, detail
(scale 1:10)

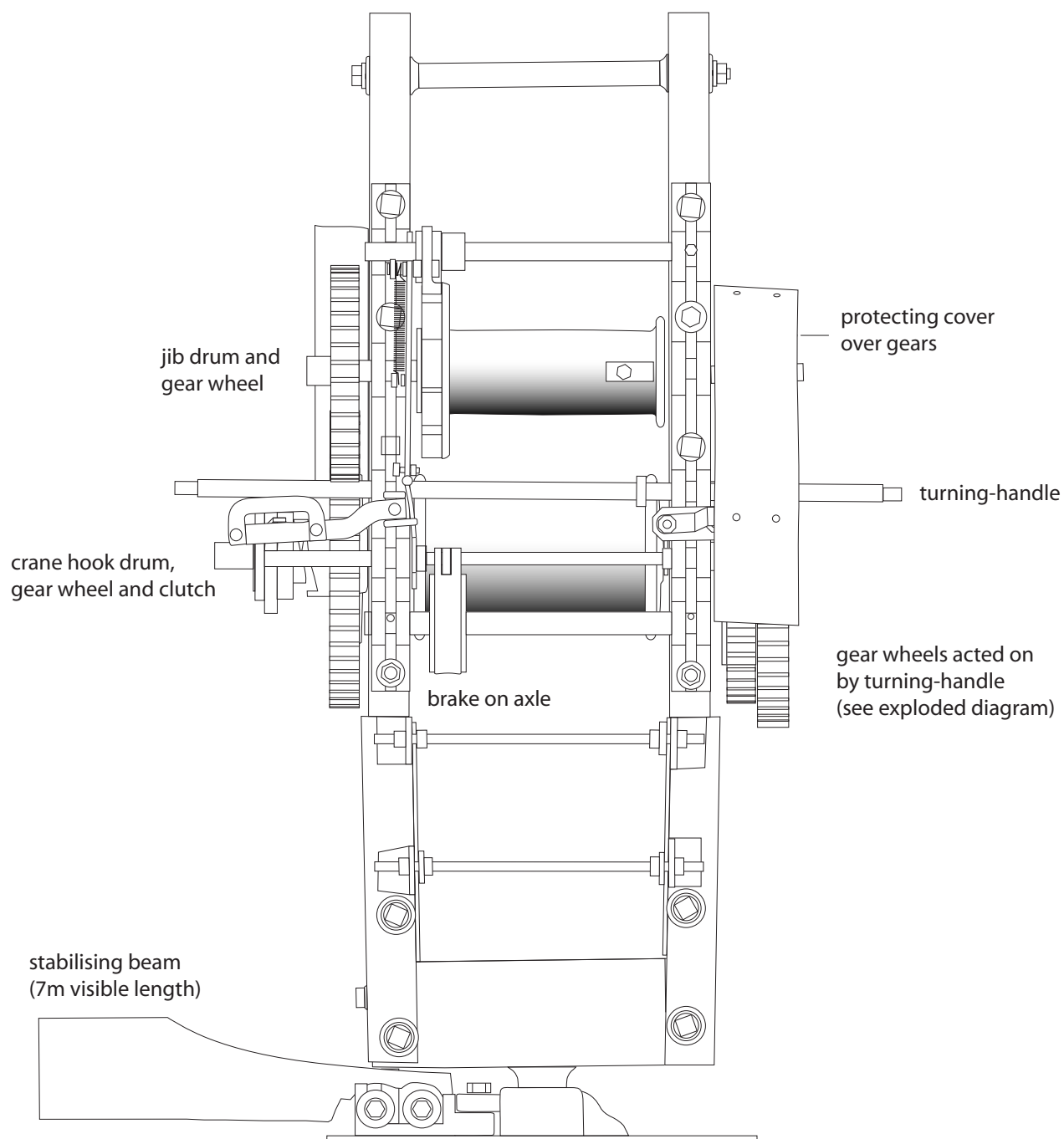


Fig. 6 Crane, left side, showing
fixing arrangements for base of jib
(scale 1:10)

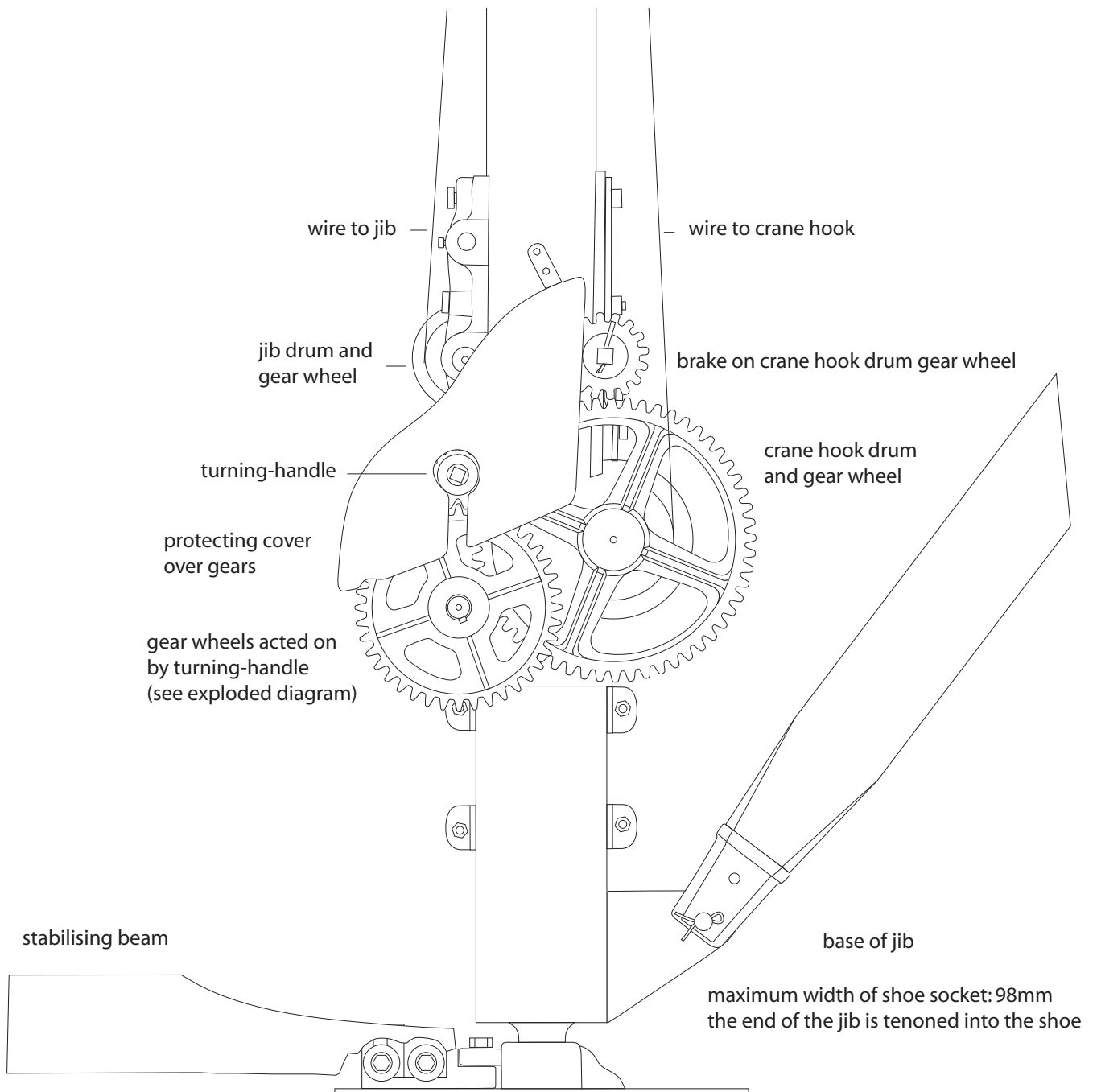


Fig. 7 Right side of crane, detail
(scale 1:10)

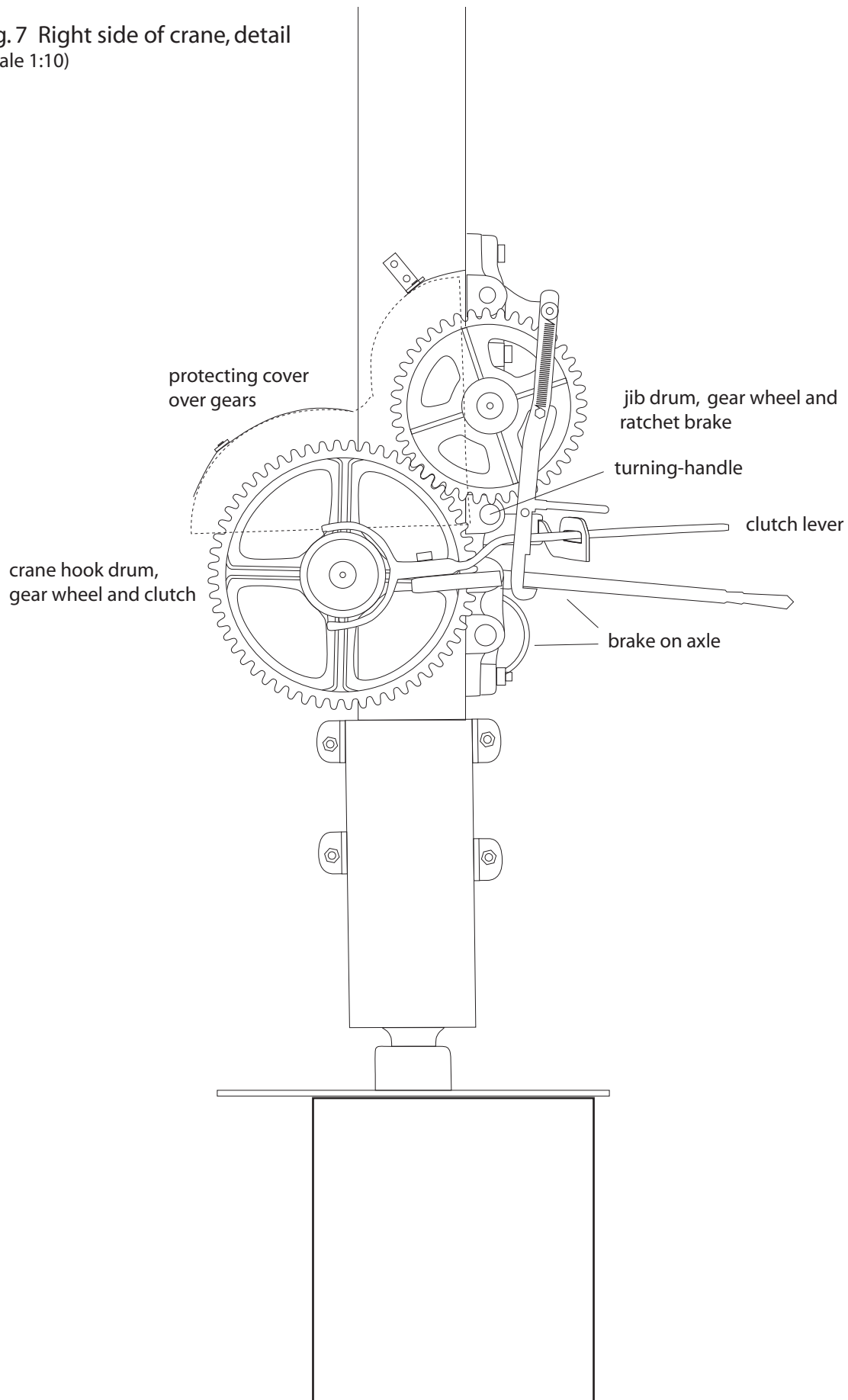
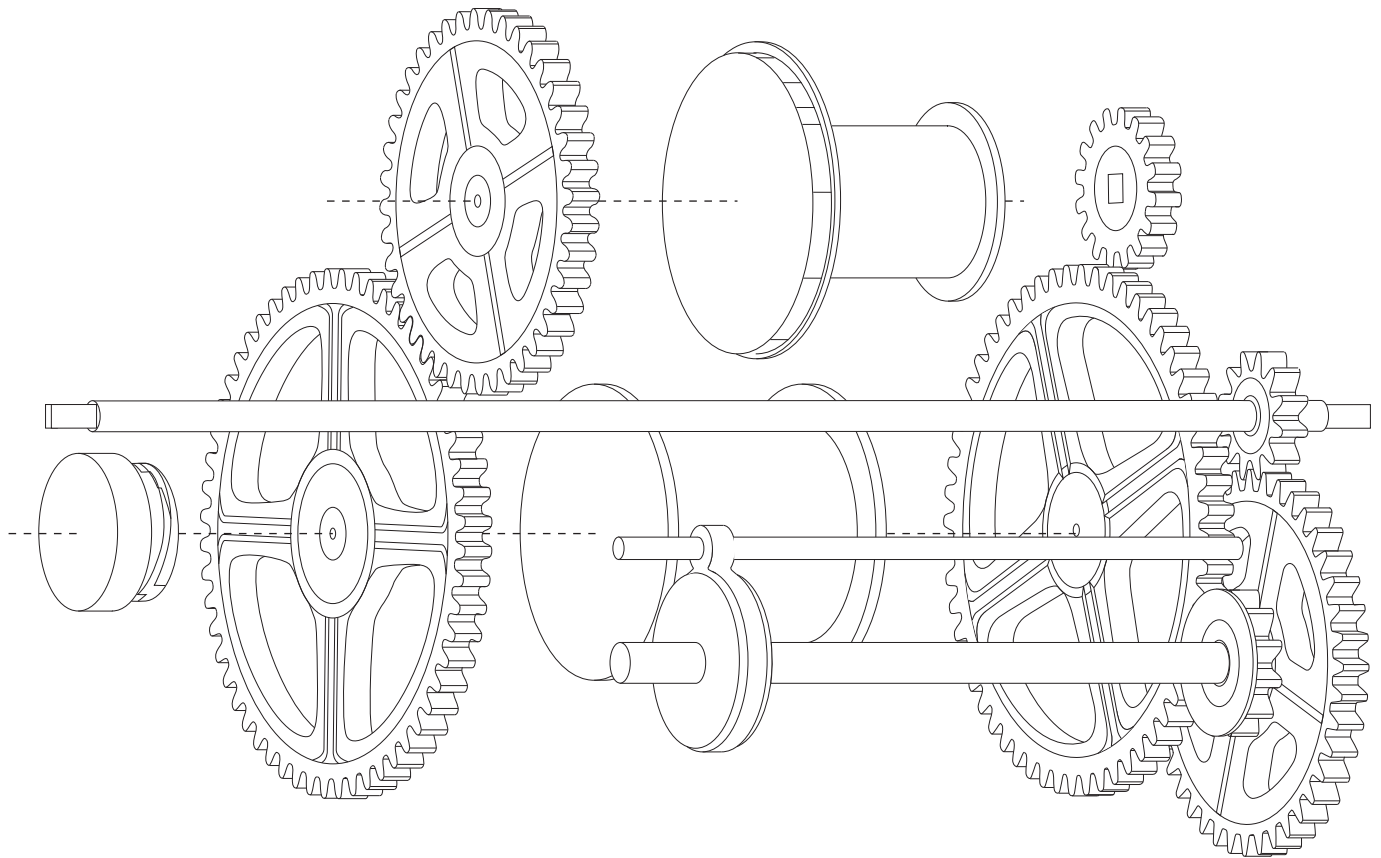
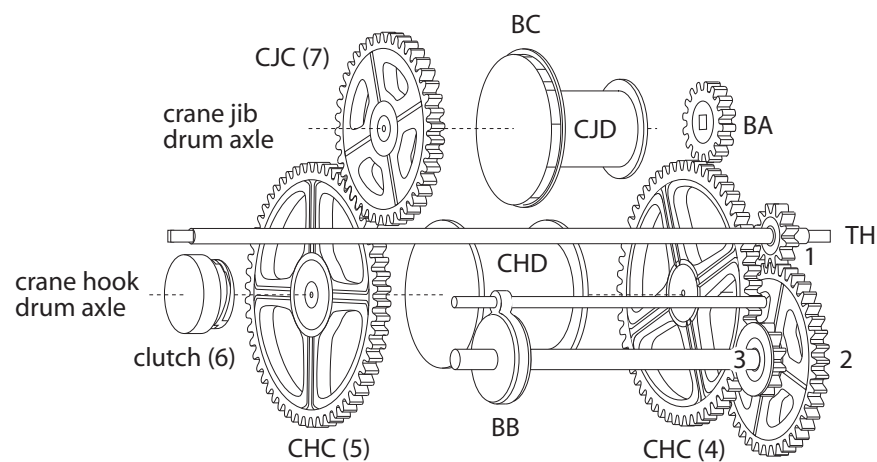


Fig.8 The Crane Gearing



Key



The relationship of the various gears, drums and brakes is as follows:

The turning handle (TH) turns the cogwheel at 1 which acts on the larger wheel at 2.

A smaller gear at 3 then acts on the large wheel (CH4) working the drum (CHD) around which is wound the wire attached to the crane hook.

A complimentary cogwheel (CH5) on the left side of the drum turns when the clutch (6) is engaged. This, then operates on the upper cogwheel (7) working the drum with the wire which controls the jib.

The crane hook can be operated independently of the jib. The jib and the crane hook can be operated in tandem. The jib, however, cannot be worked independently of the crane hook.

There is a rudimentary brake on the crane hook cogwheel at BA. There is another brake on the axle of the gears worked by the turning handle at BB. There is a third ratchet brake on the jib drum at BC.

CHC: crane hook cogwheel; CJC: crane jib cogwheel; CHD: crane hook drum; CJD: crane jib drum

Fig.9 Stabilising beams,
pegged in at ends
(scale: 1:10)

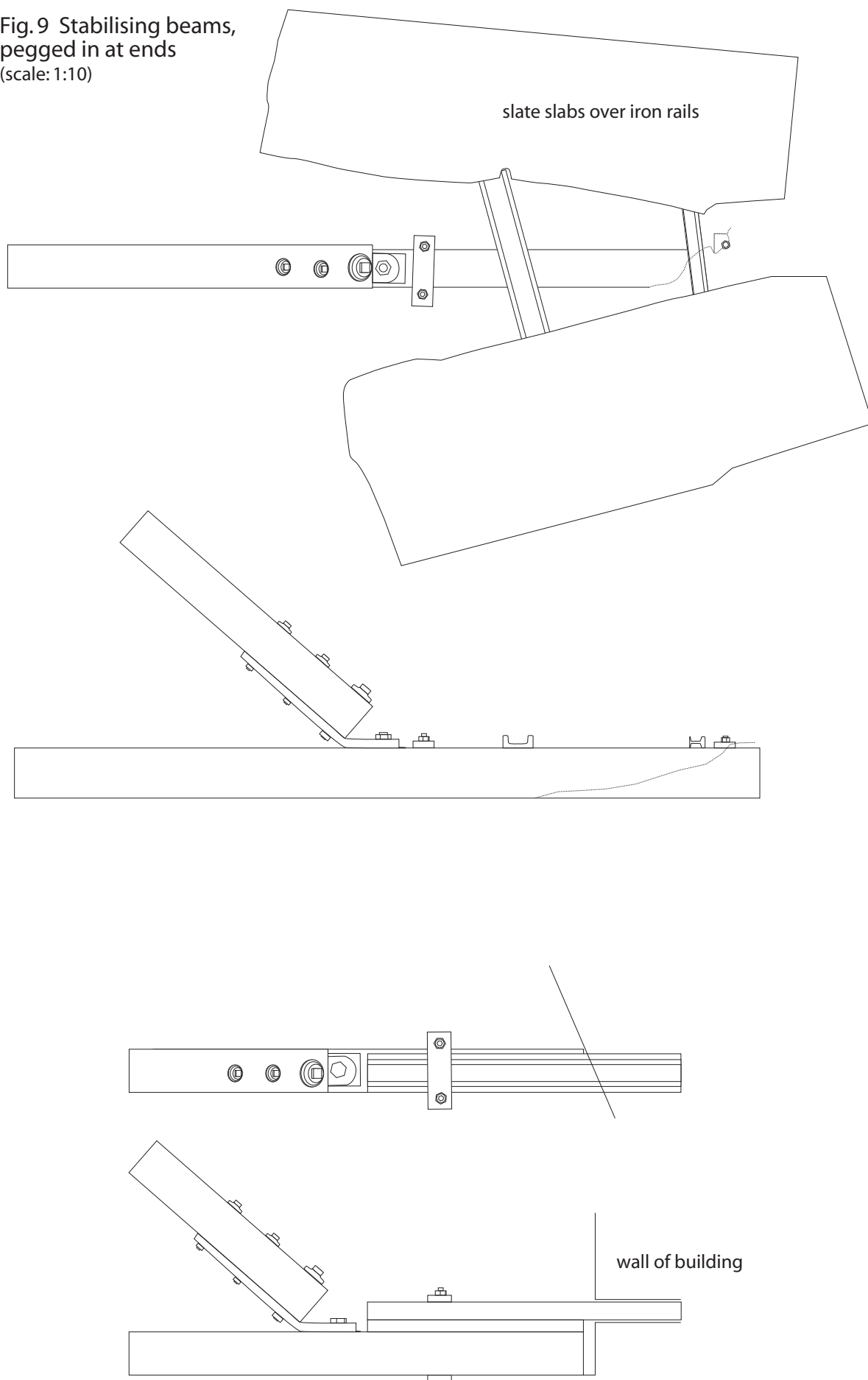
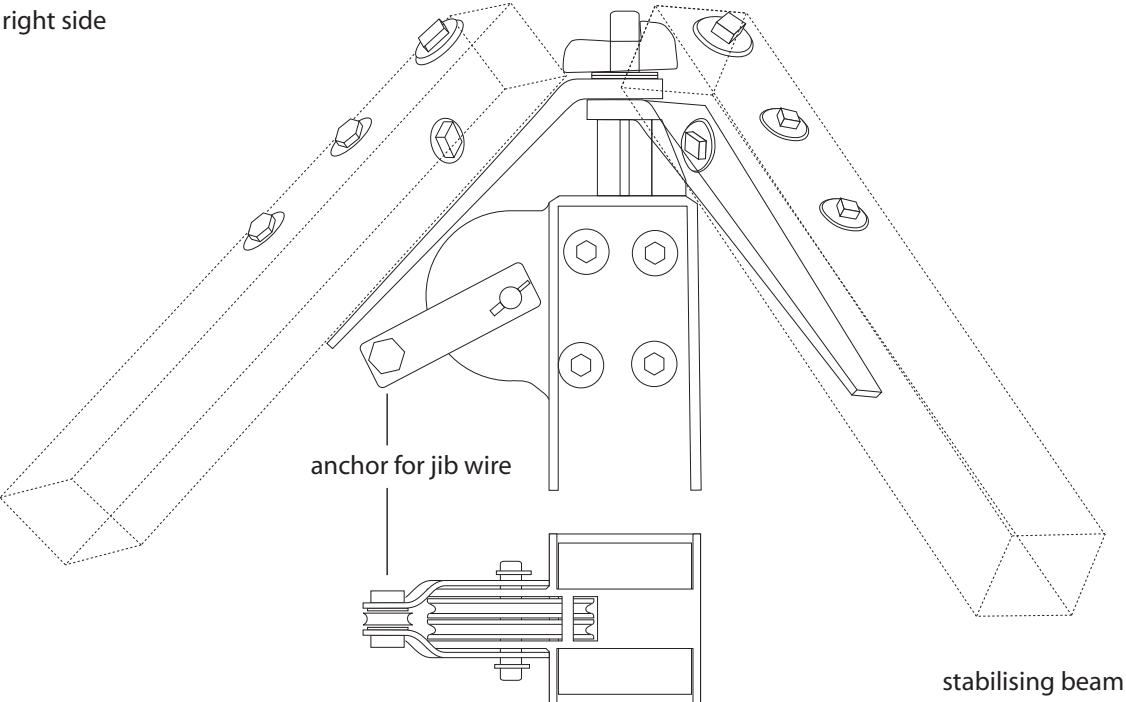


Fig. 10 Pulley at top of crane and stabilising bars
(scale 1:10)

right side



stabilising beam

front

pulley wheels for
jib wire (left)
and
crane hook (right)

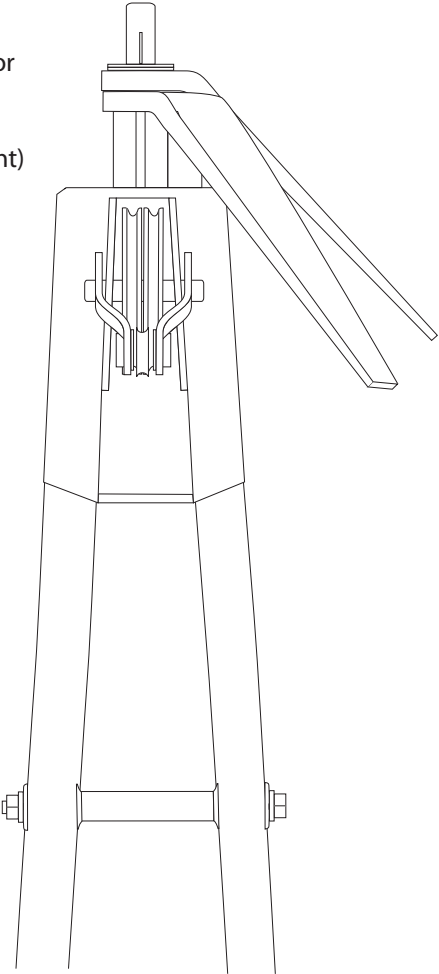
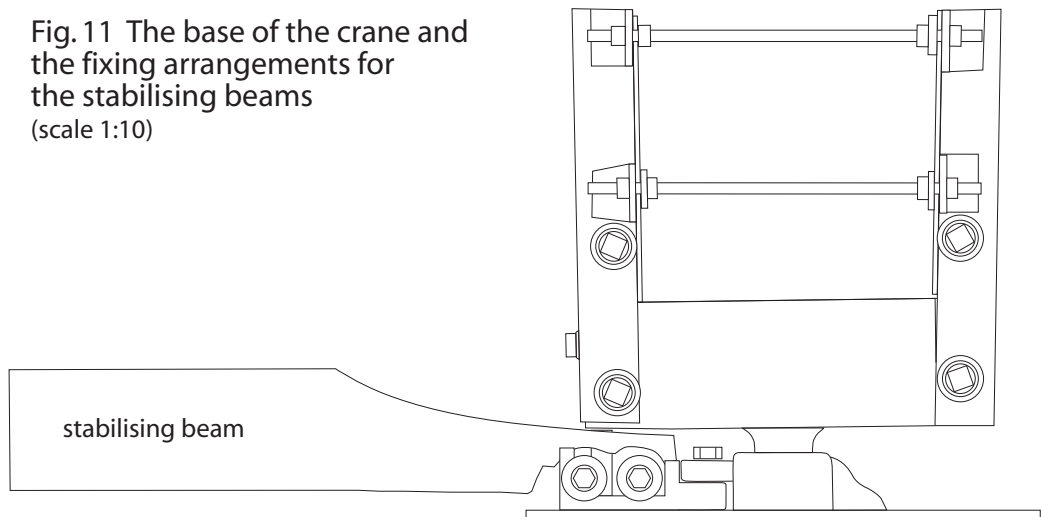
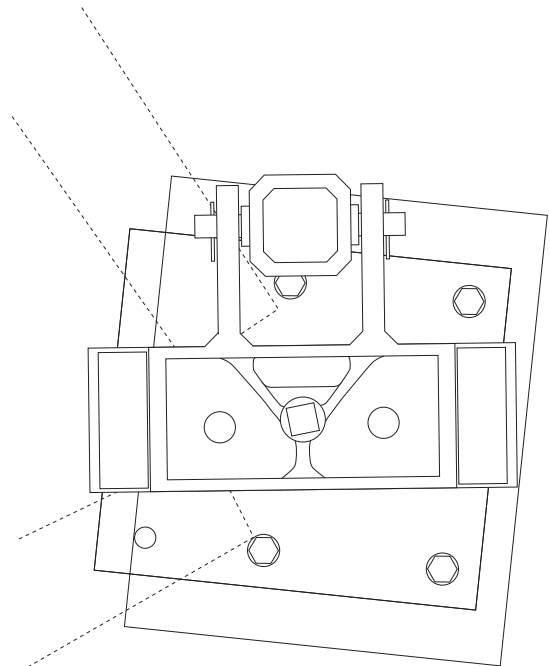


Fig. 11 The base of the crane and the fixing arrangements for the stabilising beams
(scale 1:10)



present orientation of crane base



present position of stabilising timbers

The swivelling base of the crane is fixed to a flat iron plate
There are two connectors attached to the central column within which the crane base swivels. These are used to attach the stabilising beams

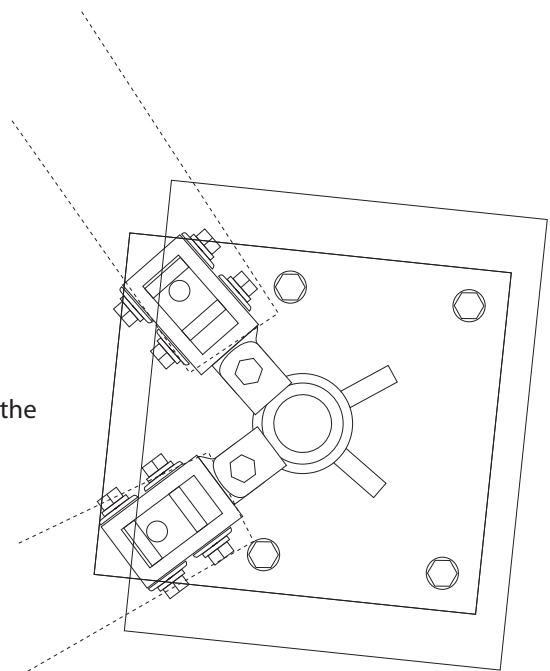
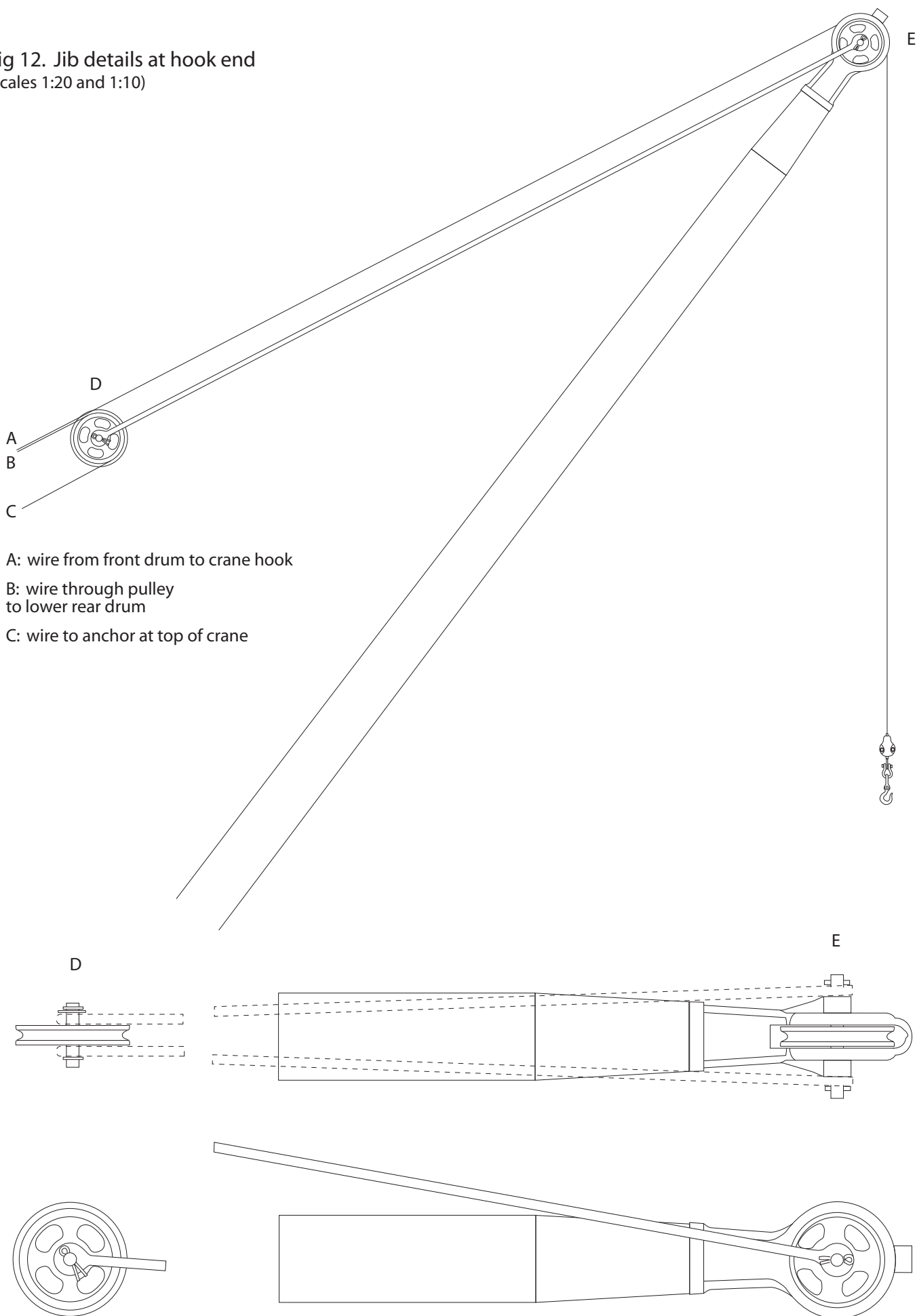


Fig 12. Jib details at hook end
(scales 1:20 and 1:10)





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