



so that the valve operators at the corners may keep the moving girder C exactly horizontal and the valve operator at the centre of the span may keep the span itself horizontal. A telephone system has been arranged by which each lift at the ends of the span will be reported to the officer in general charge and the two ends thus kept at the same vertical height.

There is a system of counter-weighted screw-jacks, hand-operated, to follow up the hydraulic jacks so that in the event of a packing blowing out or any accident happening to a hydraulic jack, it may be removed and repaired while the bridge is resting on the follow-up screw-jacks. The hoisting chains, two to a corner, are each composed of two bars, 30 inches by  $2\frac{1}{4}$  inches, 30 feet 0 inch long, connected by 12-inch diameter pins. The pins for connecting these links to the girders are also 12-inch diameter. When a full link has come up through the girder C it will be suspended from a purchase on the top strut and the pin connecting it to the link below will be withdrawn, allowing the link to be lowered on to the span. The movable pins for hoisting are suspended from above and counterweighted so that they are easily inserted or withdrawn by two men.

The mooring frames are calculated at erection unit stresses for a force of 300,000 pounds applied at the lower end. The mooring lines, four in number at each end, are  $1\frac{1}{4}$ -inch plough steel rope with 9 part  $\frac{3}{4}$  inch wire rope falls leading to engines on the deck. The hoisting tackle,

or back-guy for the mooring frame, is a 9 part  $\frac{7}{8}$  inch wire rope tackle leading to one of the main hoisting engines formerly used on the erection traveller.

## QUEBEC BRIDGE SPAN FALLS

Quebec, September 11th.—The central span of the Quebec Bridge fell into the river at 10.45 this morning, when it had been raised only fourteen feet. Nine St. Lawrence Bridge workmen missing. Thought that one of mooring pins failed. Cantilever arms not affected.

The council of the Canadian Society of Civil Engineers has asked all of its members to protest against the employment of alien engineers on Canadian work.