

This crib was brought down when about half built in a manner similar to that used for bringing down the caissons, being placed between two rows and supported by cross timbers. No. 13 pier stands directly in the centre of the main channel, the current here being so strong as to sweep off all loose material, leaving the bottom bare rock, and thus affording little chance for anchorage.

Accordingly a "dead man" was placed on a projecting point on the south shore about 1,700 feet above No. 13 pier, this "dead man" consisted of a 16 in. pine log, 14 into a trench excavated purposely in the limestone. Both ends of the log were well loaded down with stones, and round the centre the 1 1/2 wire rope was lapped and secured, the other end of this rope was rolled in a coil on the deck of a scow anchored about 100 feet above the site of No. 13 pier, the scows attached to the crib carried 3 four ton anchors and 2 one ton anchors, these large anchors were dropped as the crib floated down, and as it passed the scow the end of the 1 1/2 wire rope was taken on board and secured to the snubbing posts. Thus, the crib had 3 4 ton anchors, and this wire rope, two of the anchor lines passed through the front timbers of the crib a few feet from the bottom, thence up to above water level, then over another cross timber, and round the snubbing posts, and the other two lines passed directly above water over the front timbers and around the posts.

As the line from the "dead man" passed diagonally across the straight channel it was necessary to load it down so as to avoid any risk of accidents to passing vessels; for this purpose 3 heavy pilehammers were used, tied together and dropped over the line at the centre of the channel. The breaking strain of the 1 1/2 inch rope would be about 30 tons.

The crib was thus lowered, so that her stern remained about 10 feet above the position of the bow of the caisson when in place.

The crib was completed here and sunk, so when the caisson was floated down and dropped behind the crib, it required to be forced down to get it into place, so strong was the eddy formed by the protection crib.

The bottom here was bare rock perfectly clear, so that when the caisson was sent concreted commenced at once.

I may mention that it was in connection with this pier that the greatest loss of plant was sustained by the contractors. No. 5 dredge was brought over to try the nature of the bottom before the protection crib was sunk. A scow was brought alongside and secured to the dredge, the action of the current on this scow swung the dredge round, and after swinging for a time broke away from her anchor and dropped swiftly down stream, till meeting with a more shallow part of the river, the "specks" came in contact with the bottom, and the dredge went over on her side, where she now remains, the men on board having narrow escape from drowning. As soon as the piers were finished the caissons were well protected from the action of the current by rip rap to within a few feet of low water level.

As some curiosity was felt as to the power required to hold No. 13 caisson in the heavy current, some experiments were made with two models one 4 times the size of the other. The models were held in the current, and the strain on the line holding them measured, by observing the strain in currents of different speeds we arrived at the conclusion that the force varied as the lineal speeds were arrived at the conclusion that the force varied as the lineal dimensions of the caisson, and as the square of the velocity of the current from which calculated the holding strain on the large caisson in the main channel to be from 60 to 100 tons, being subject to serious increase of strain due to shearing from side to side.

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