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DESCRIPTION OF A DREDGE.

BY F. P. MILLER, C. E.

The dredge, designed by Mr. John Kennedy, Engineer of St Lawence Ship Channel Improvements, Montreal, is of the elevator or ladder type, and is shown by engravings at pages 260-1. It has a single set of buckets which act through a well along the centre of the hull and will dredge to a depth of 22 feet below the water level. The dredge was designed for working on a river in the Western States, where timber is abundant and economy of construction is of some consequence, and timber has therefore been used in several places where under other circumstances iron would have been used. This form of dredge is eminently suited for dredging in ship channels, open spaces in harbours, &c. The hull is designed for working in water not subject to any great storms, and is scow-shaped to give a roomy deck especially at the ends where the winches are placed. It is 135 ft. in length, 28 ft. breadth and 12 ft. deep. Figs. 1, 2 and 3 shew the position of the machinery. Figs. 4 to 8 shew the details of the buckets.

The upper tumbler shaft and the head of the bucket frame are supported by a main framing which is strongly built into the hull. The framing is composed of white oak timbers strengthened and secured with bolts, cast-iron knees and rails. The sides of the frame are closed in with 1½ inch pine planking, tongued and grooved, and placed in line with the insides of posts. A breast of five inch pine planking extends across from post to post, and from the deck to the heads of the posts The breast is iron-plated on the face next the buckets from the chute to 2 feet above the tumbler. The planking is lapped and secured with bolts so as to exclude water and mud, as well as to protect the plank. In front of the frame one inch sheeting extends along the sides of the well and is finished with rails at the same rake as the main braces of the frame and 5 feet above them.

The forward or lower end of the bucket frame is supported by white oak A frames. The heads of the frames have cast iron knees and are connected by an oak cross bridge 18 by 22 ins. The bucket frame has sides of best sound white oak dressed to 8 inches by 24 inches. The ends of the frame are mounted with wrought iron straps 3½ by 7 inches. The frame is trussed vertically as shown in *Fig. 1*, and horizontally, by a system of cast iron transoms and 1⅛ inch round truss rods, not shown. The rollers supporting the chain of buckets on the frame are made of cast iron and are 15 inches in diameter and 1¼ inch thick in the body. The bodies of the spindles are square and are made fast in the rollers by oak and iron wedges. The journals are made of steel. The bushes of the pillow blocks are made of iron.

In the bucket chain there are twenty-seven buckets, twenty-seven pairs of links and fifty-four link pins. The buckets are of 3 ft. pitch, 21 cubic ft. capacity and are in this instance designed to work in materials of moderate hardness. The bucket bottoms are made after a patent of Mr. Kennedy's and are of annealed crucible cast steel, having eyes for the links cast on solid. The backs of the buckets are of ½ inch steel plate. The lips are of ⅞ inch steel plate tempered on their cutting edges.

The buckets are riveted with rivets ⅞ inch in diameter in drilled holes. The eyes for the links are bushed with steel tempered hard and shrunk into the eyes. The pins and links are made of steel.

The dead eyes carrying the head of the bucket frame are made of cast iron and they are of unusual strength. The pillow blocks of the tumbler shafts are made in the most accurate manner with planed joints throughout and the brasses are made reversible

The tumbler shafts are made of forged steel. The spur wheels (one on each end of the shaft) are 16 ft. 2ins. in diameter, 9 inches face and 3½ inches pitch.