

off. In Fig. 2 will also be noted a thick strand of oakum used to ensure tightness between each pair of shells, and the concrete and cement bags on which the shell was set, thus making a close joint between the base and the shell. The box formed by each set of three shells is filled with concrete blocks and the space left between these with a rich mixture of concrete.

It was originally intended to build the superstructure (granite and concrete masonry) *in situ*, but it was afterwards deemed preferable to adopt block work for a part of it. The superstructure for each section, formed by

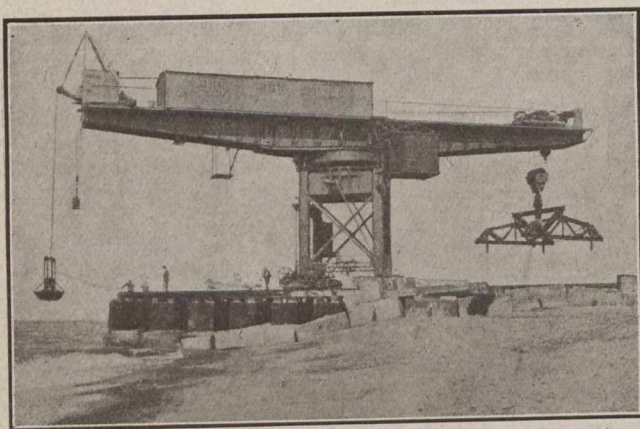


Fig. 3.—110-ton Crane Used in Placing Sections and Blocks.

three shells, was completed by two concrete and granite facing blocks of an average width of 5 ft.; the space between them was filled with 1:2:4 concrete, reinforced with rails running lengthwise in the jetty.

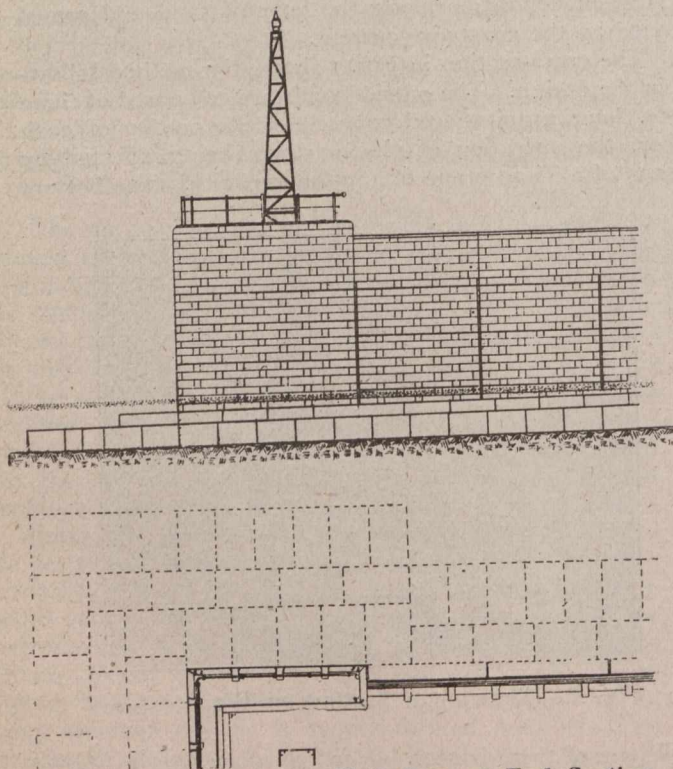


Fig. 4.—Elevation and Half Plan of End Section.

These blocks have the same dimension in the length of the jetty as the shells on which they rest. A continuous expansion joint is thereby formed from the base to the top of the jetty, provision being made for a joint in the concrete forming the centre part of the superstructure.

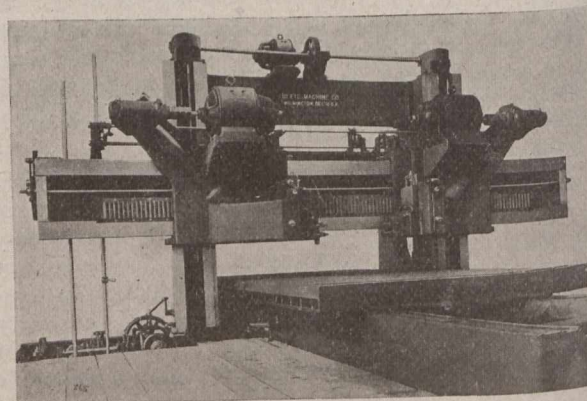
The footing of the jetty is secured against scour by means of two granite-faced concrete blocks on each side, having a total width of 13 ft. At the head of the jetty these blocks are 21 ft. wide, made up of three rows, that nearest to the jetty weighing from 15 to 20 tons, the others 8 and 9 tons respectively.

The head of the jetty (shown in plan and elevation in Fig. 4) was built up of four shells, differing somewhat from those already mentioned. They have vertical sides and are 24 ft. long and 28 ft. wide. Their weight varies from 84 to 102 tons. The total weight of the head section, when filled with concrete blocks, is 1,020 tons, while the one adjacent weighs 638 tons. By the aid of the superstructure these two sections are combined to form one mass, having a weight of 2,035 tons.

### SPECIAL PLANER OF INTERESTING DESIGN.

THE unusual type of planer shown in the illustration was built by the Betts Machine Company, Wilmington, Del., for the Commonwealth Steel Company, Granite City, Ill., after the latter company's special design. It is designed especially to machine the ends of castings running up to 30 feet in length, a proceeding that is impossible with the ordinary type of planer. The cutting tools are therefore arranged so as to move at right angles to the platen, which permits machining the ends of castings of any length as well as other surfaces which cannot be reached with the ordinary planer.

The machine consists essentially of a 10 x 7 x 18 ft. planer of standard construction. The cross rail is, however, special and carries two cutting heads, each of which



Planer for Machining Large Castings.

is driven by a 30-h.p. Westinghouse electric reversing planer-motor.

The two motors are connected together electrically so that if one reaches the end of a stroke before the other, it automatically stops and waits for the other to finish its stroke, when they both reverse together. To obviate the danger of the heads running together, a push-rod is mounted on one which opens the circuit and stops the motors if pressed.

The heads are designed for a cutting speed of 30 ft. per minute and a return speed of 75 ft. per minute, and are guaranteed to take two  $\frac{1}{2}$  x  $\frac{1}{8}$ -inch cuts simultaneously in cast steel.

The platen is provided with a power rapid traverse of 20 ft. per minute as well as a power feed. It is driven by a 7½-h.p. motor, while the cross rail is raised and lowered by a similar motor.