The coarser gravel, however, would go to the water shafts; whereas the fine quicksand would again be blown out through pipes, until the preponderance of boulders and small rounded stones, compelled a recourse to the water shafts again, provided any dredge whatever had the capacity to remove stones imbedded in quicksand.

For a direct removal of material through locks, no special means were deemed necessary beyond the ample facilities afforded by four capacious air locks already at hand.

**New York Caisson.**

The plans for this caisson were perfected in the summer of 1870. A contract for its construction was made in October with Messrs. Webb & Bell, the builders of the first caisson, the iron work being done by John Roach & Son, of the Morgan Iron Works. It was built at the foot of Sixth street, New York, the old yard in Greenpoint having been abandoned for ship building purposes.

A rather severe winter with delays on the part of the iron work prolonged the completion of it to the 8th of May, on which day it was launched with the same success attending the first launch. It was then towed to the Atlantic Basin, where seven additional courses of timber and concrete were put on preparatory to its removal to its permanent site. In its

**Construction**

this caisson is in its general features a duplicate of the Brooklyn caisson. It is built of yellow pine timber, the air chamber being lined with a thin skin of boiler plate on the inside. The roof consists of five courses of yellow pine sticks, twelve inches square; the inclined sides surrounding the air chamber are also of yellow pine, and are nine and a half feet high on top, and taper to a rounded cutting edge of cast iron eight inches wide and enveloped by an armor of boiler plate.

The timbers in all the courses are scarfed and bolted together with screw bolts and drift bolts. About one hun-