ting edges of both main and cross-walls were protected by a covering of $\frac{3}{16}$ inch boiler plate, the plates being bent and cut to fit the angles and corners, riveted together and fastened on with wrought-iron spikes.

The combination of the \/-shaped cross walls, with the inclined walls of the sides, divided the interior of the caisson into four bell-shaped chambers, the two central ones being nearly square, and those at the ends of pentagonal form, each having a rectangular opening above five feet and four inches by nine and a half feet. This form is one at once well suited to sustain the weight of superposed masonry, and especially adapted to facilitate excavation. The caisson is thoroughly braced by the interior walls, and not encumbered with exposed brace timbers; the walls and edges are of such form as to act as wedges, which, under the weight of masonry, and by pressure above, feed the sand towards the centres of the chambers where the dredges work; while, as the cross-walls were placed thirty inches above the outer edge, a diver could have free access from chamber to chamber, should this be found necessary.

Twenty-four suspension rods, each twenty-four feet long and two inches and a half in diameter, with the upper end formed into an eye, were built into the walls. They were arranged in pairs, and passed through every square timber in the outer walls, taking hold with nut and washer on the under side of the main sills, the nut fitting into a square recess cut in the triangular stick below. Eighty $1\frac{1}{2}$-inch gas pipes were also placed in the caisson, arranged along the sides and cross-walls, and terminating in cast-iron nozzles immediately above the iron plating; they were intended for water-jet pipes, but the sand fed itself so well to the dredges that none of them except those in the angles were ever used. The whole planking was thoroughly caulked, and the interior coated with roofing pitch. A frame, provided with bolt holes, was carefully fitted into the rectangular opening above each chamber, and an accurate pattern taken, from which a cover could be made to fit this frame; so that in case extraordinary obstructions were encountered, the dredge could be withdrawn, the cover or trap placed in the frame, and bolted tight by a diver, converting the chamber into an air-tight caisson, when the obstructions could be removed by working in compressed air.

Under other circumstances it would have been preferred to build this caisson