hemp, 2½ inches in circumference, with a breaking strain of 2¼ tons. The 1,000 fathoms next the dredge were 'hawser-laid,' 2 inches in circumference. A Russian hemp rope appears to be the most suitable. A manilla rope is considerably stronger for a steady pull, but the fibre is more brittle and liable to go at a 'kink.' I have never seen a wire-rope used, but I should think it would be liable to the same objection. The 'Challenger' is to be supplied with 'whale-line' for her great expedition. The frame of one of the dredges which we used in the Bay of Biscay is represented at Figs. 47 and 48. The length of

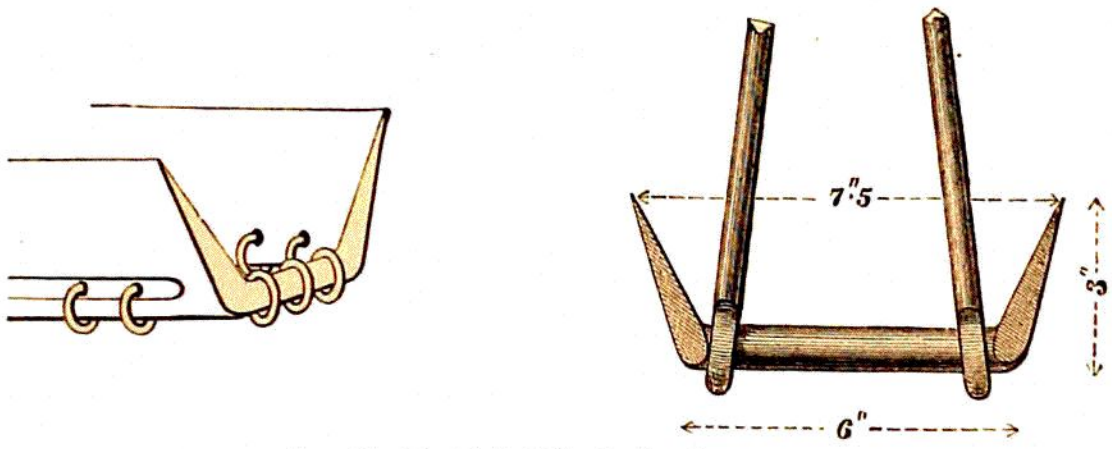

FIG. 47.—The End of the Dredge frame.

the dredge-frame is 4 ft. 6 in., and it is 6 inches wide at the throat or narrowest part. The dredge used in the deepest haul was somewhat different. About half of each arm next the eye to which the rope was attached, was of heavy chain. I doubt greatly, however, if this is an advantage. The chain drags along in front of the dredge, and may possibly obstruct the entrance of objects and injure them more than a pair of rigid arms would do. On one side the chain was attached to the arm of the dredge by a stop of five turns of spun-yarn, so that in case of the dredge