H.M.S. 'Cyclops' in 1857.[1] He used iron wire braces to support the sinker, as these detach more freely than slings of rope; he replaced Brooke's round-shot by a leaden cylinder to diminish the resistance and thus increase the velocity in descending; and he adapted a valve opening inwards, to the terminal chamber in the rod, to prevent the washing out of the sample. Commander Dayman seems to have found the apparatus thus improved to answer well. He used it throughout his important survey of the 'telegraph plateau.'

The 'Bull-dog' sounding machine (Fig. 40) is now probably the most generally known of these dredging-leads. This instrument is an adaptation of Sir John Ross' deep-sea clamms, with the addition of Brooke's principle of the disengaging weight. It was invented during the famous sounding voyage of H.M.S. 'Bull-dog' in the year 1860, and Sir Leopold M'Clintock gives the chief credit of its invention to the assistant-engineer on board, Mr. Steil.[2] A pair of scoops A close upon one another scissorwise on a hinge, and have two pairs of appendages B, which stand to the opening and closing of the scoops in the relation of scissor handles. This apparatus is permanently attached to the sounding-line by the rope F, which in the figure is represented hanging loose, and which is fixed to

[1] Deep-Sea Soundings in the North Atlantic Ocean, between Ireland and Newfoundland, made in H.M.S. 'Cyclops,' Lieut.-Commander Joseph Dayman, in June and July 1857. Published by order of the Lords Commissioners of the Admiralty. London: 1858.

[2] Remarks illustrative of the Sounding Voyage of H.M.S. 'Bull-dog' in 1860; Captain Sir Leopold M'Clintock commanding. Published by order of the Lords Commissioners of the Admiralty. London: 1861.