

view of procuring specimens of the deposits below the superficial layers. With it good samples of the mud and of the bottom water are obtained without trouble. The instrument consists of the "water-bottle" A, a tube about 18 inches¹ long and 2½ inches² in diameter, of about one litre capacity. It has at each end a valve, H, K, made of india-rubber, on a metal seating, opening upwards. Above the upper valve H, the shank C is screwed into the tube A, and below the lower one K, the mud tube B, which is 12 inches³ long and 1 inch⁴ in diameter, is screwed to A. Into the lower end of the mud tube B can be inserted the valve L, which consists of a piece of thin sheet brass, cut out like a comb, and bent round into a cylindrical shape. It is soldered to a stouter piece of brass tube, which fits into the end of B and is retained by a bayonet joint. At the upper end of the shank C the tumbler D supports the weight E by the sling F, and is in its turn supported by the sounding line M.

The details of the tumbler are shown in Figs. 8, 9, 10. It will be seen that at its

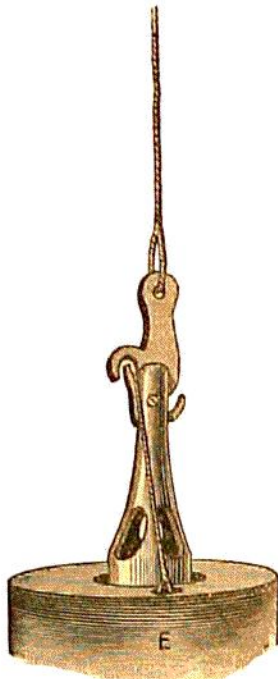


Fig. 8.

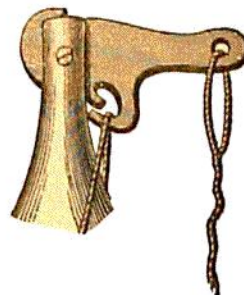


Fig. 9.

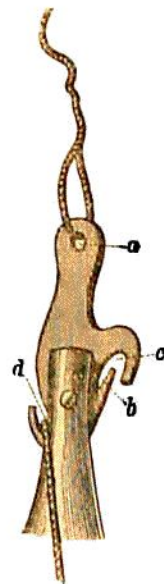


Fig. 10.

Disengaging Apparatus for Buchanan's Sounding Tube and Water-Bottle.

upper end it has the hole *a*, into which the eye of the sounding line is spliced. At the lower end it has three notches, *b*, *c*, and *d*. If it is not wished to detach the weight, the sling supporting it is hooked into the notch *d*, which is considerably below the suspending axis. Consequently, when the tube reaches the bottom and the sounding line above slackens, the tumbler still preserves its upright attitude, and on heaving up, the sinker is recovered along with the tube. If the sinker is not to be recovered, the sling is hooked in the notch *b*, which is above the axis. When the tube reaches the bottom and the sounding line slackens, the pressure of the sling upsets the tumbler, which falls

¹ 45·7 centimetres.² 57·35 mm.³ 30·48 centimetres.⁴ 25·4 mm.