

where the pin is fastened the cross bar is bent outwards to bring the jaws of the clamps into the line of traction. The shoulder thus formed bears the entire strain in opening and closing the bottle as both ends of the clamp are balanced beneath it. It will be seen that these attachments are not rigid, thus preventing any straining or jamming of the stopper.

A loop of heavy brass wire L connects the two side bars F. F. above and another loop M is attached to the cross bar A. To these loops strings are attached enabling apparatus to be worked under water.

A pair of spiral springs G. G. made of No. 23 wire are hooked over the ends of the cross bar A above and fastened to the foot of the upright bar below. They close the bottle when it has been opened and keep it closed at other times. To place a bottle in the frame the ends of the clamps C and C are compressed between the thumb and forefinger sufficiently to open the jaws. The frame, with bottle in position, is then lowered by means of a heavy string N attached to the loop L, when the desired depth is reached the stopper is raised by pulling a lighter string N, attached to the cross bar loop O. On releasing this again the springs close the bottle. The movement of raising the stopper can easily be felt at a depth of 15 or 20 feet.

The bottle fills in about 20 to 30 seconds and the bubbles of displaced air can usually be seen. It is better not to fill the bottles quite full, but to leave some space for subsequent shaking.

In very swift currents or when the sample is to be taken at a greater depth than 30 feet an additional weight in the form of a small bag of shot may be tied to the lower part of the frame.

To prevent any tendency of this frame to rotate while being lowered in a current, and thereby tangle the strings, I allow one string to glide in each side of my forefinger or else hold one in each hand.

Before placing a bottle in the frame it is well to ascertain