

and of the steel line (piano wire) afterwards adopted for sounding. It will be obvious at once what a saving of space is obtained by the use of a steel line. This will be clear, too, if we look at Sir William Thomson's sounding machine, the principle of which is clearly illustrated by the following instructive figure from Sigsbee's book (Fig. 5).

Thomson's
sounding
machine.

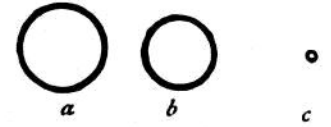


FIG. 4.—SOUNDING-LINE AND WIRE.

a and *b*, Circumference of the hemp sounding-line of the "Challenger"; *c*, piano wire. (From Sigsbee.)

The wire is wound in by a large wheel consisting of a drum 2 feet 6 inches in circumference between two thin galvanised iron plates 6 feet in circumference, the object of making this wheel of such a size being to enable the line to be paid out and hauled in quickly.

Precautions
necessary in
making
soundings.

In taking soundings the art consists in getting the wheel and line to stop the moment the plummet touches the bottom.

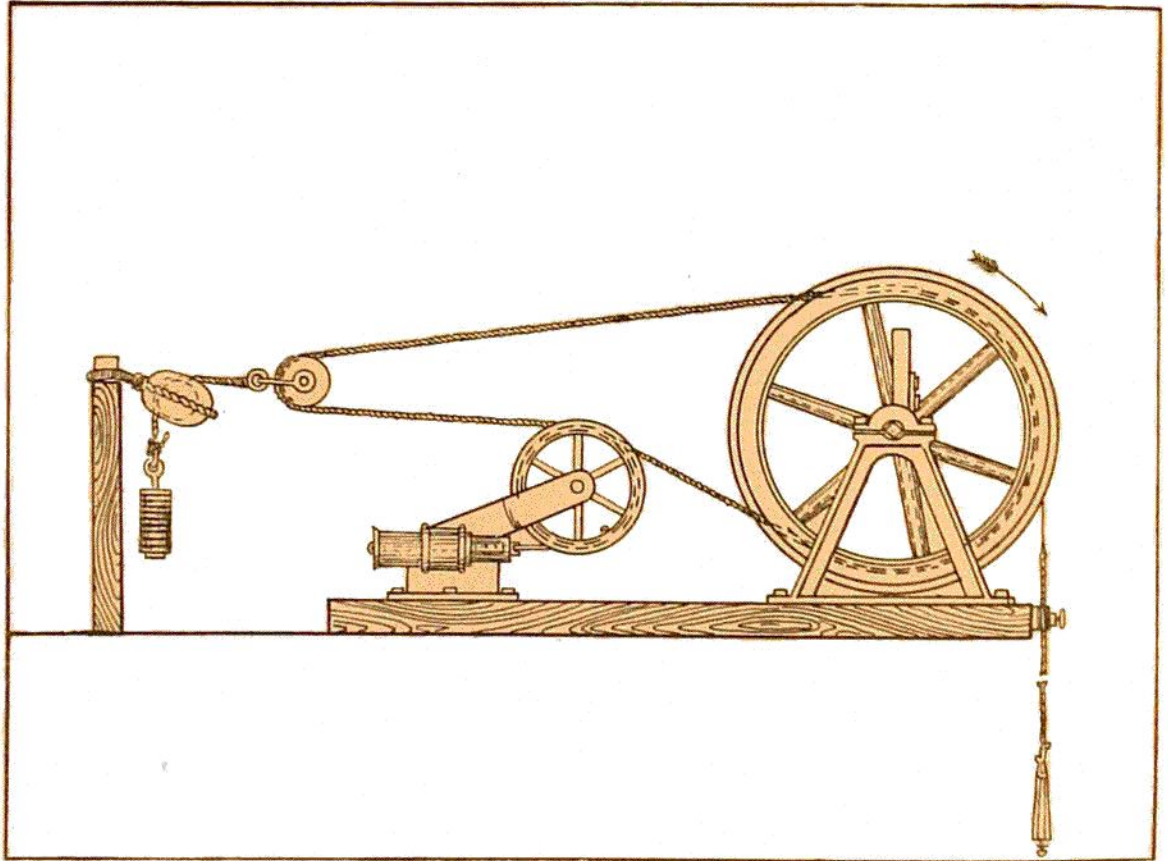


FIG. 5.—THOMSON'S SOUNDING MACHINE. (From Sigsbee.)

The line drifts when free of the lead, as it is, of course, relieved of the weight as soon as the bottom is reached, but there still remains the weight of the line itself, while the momentum of the wheel will cause it to continue revolving for a little while. The wheel must consequently be made as light as possible, and a resistance of some sort must be provided, rather stronger at