TAUT WIRE MEASURING OPERATIONS AT SEA.

Lecture delivered by Captain J. A. EDGELL, *Assistant-Hydrographer of the Royal British Navy, before the Third International Hydrographic Conference, Monaco,* 22nd April, 1932.

Captain RUDE'S little lecture has a certain bearing on another method of carrying out very much the same sort of work, and it may be of interest to the Conference to hear a little bit about it.

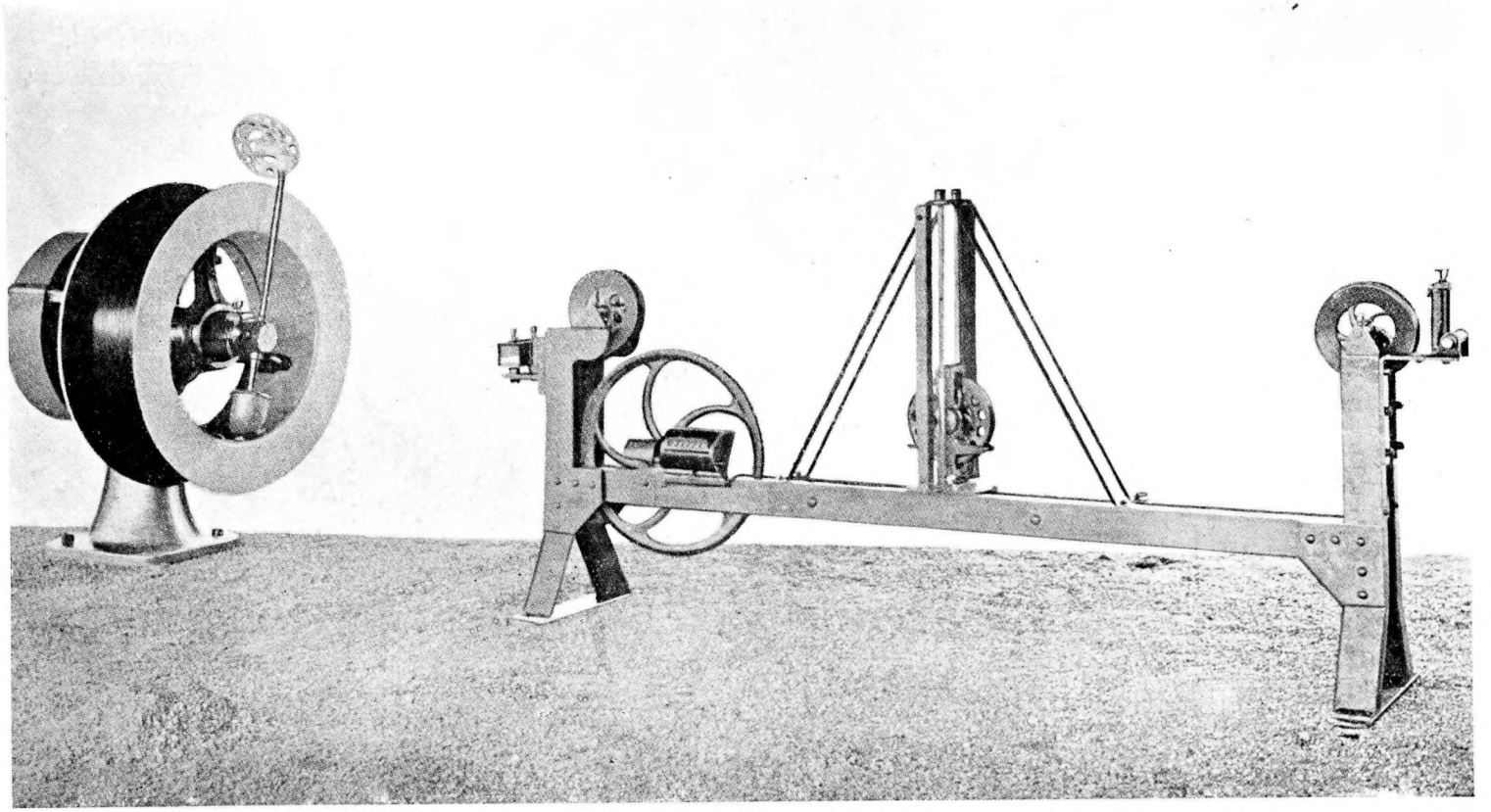
As a matter of fact, what I am going to describe briefly has been in use in the British Naval Surveying Service for some considerable time, but the apparatus is made by the Telegraph Construction and Maintenance Co. of London and they have been rather averse to having this apparatus of theirs talked about until quite recently.

Briefly, the installation in the ship consists of a drum fitted with brakes on which is wound 120 miles of piano wire. The drum is a fixture and the wire is taken off by a flier which travels round and round the drum. The wire is led from the flier through rollers over a gear wheel which operates an indicator, the indicator being graduated to .001 of a mile. It then goes over another wheel at the top underneath a movable wheel which allows for the vessel's motion, upwards over another wheel and down into the sea, the outboard end being attached to a bundle of old fire-irons or something of that sort to give it a temporary anchor.

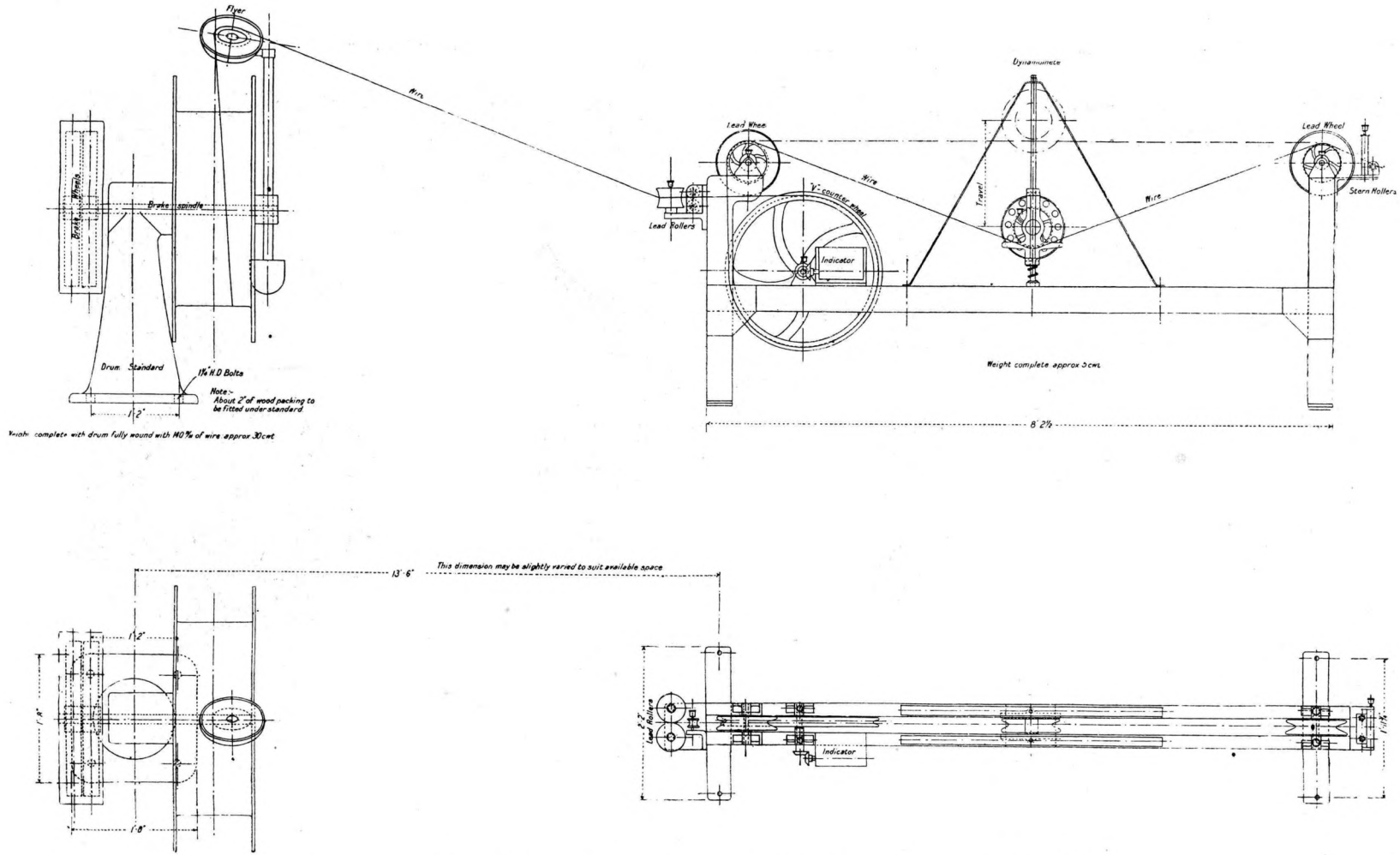
The distances to be covered vary very considerably according to the work which is being done, but in practice it is generally found necessary to allow about a quarter or half a mile of wire to be paid out before any measurement is commenced.

In a survey carried out in the West Indies, about 1921 or thereabouts, it was found impossible to measure a base on shore at the commencement of the survey, but it was also very important that the work should be pushed on as rapidly as possible. The commanding officer decided that he would make use of his taut wire measuring gear in an endeavour to measure the base in water. For this purpose two buoys were closely moored at a distance of roughly 20,000 feet apart and a series of measurements was run by the ship from buoy to buoy. The resulting distances were as follows :—

19,787 feet
19,777 »
19,780 »
19,789 »
19,781 »



View of **Taut** *Wire measuring gear* — *Vue du dispositif de mesure au moyen d'un fil tendu*



Arrangement of Taut Wire measuring gear. — Dispositif de mesure au moyen d'un fil tendu.

Later on in the course of the survey an accurate base was measured on the shore and in working through from the water base and from the land base to a common side the two distances came out at 11,739 feet and 11,737 feet which speaks very well for the accuracy of the instrument.

Captain RUDE spoke just now of a means of measuring distances at a considerable distance from the shore. We have found that by the use of a taut wire measuring gear very accurate results can be obtained. A buoy is moored fifteen or twenty, or any number of miles you like, from the shore and accurately fixed by star observation, and another buoy is laid out at a suitable distance. The orientation is obtained and a base is measured by a series of runs from buoy to buoy. After that it is only a question of laying out a beacon triangulation and working through that to the other end of your survey. The distances and orientation can be checked as necessary by laying further lines of taut wire measurements. As there is such a large amount of wire on the machine one can go for quite a considerable time without having to shift the drum. In actual practice, on board our larger survey vessels, we carry three spare drums. I believe the total weight of the apparatus is something under two tons. Of course the majority of the weight is taken up by this big drum.

If I can give any further information to any Delegates, I will be only too glad to do so, or if they will write to the Hydrographic Department in London we can give them full details.