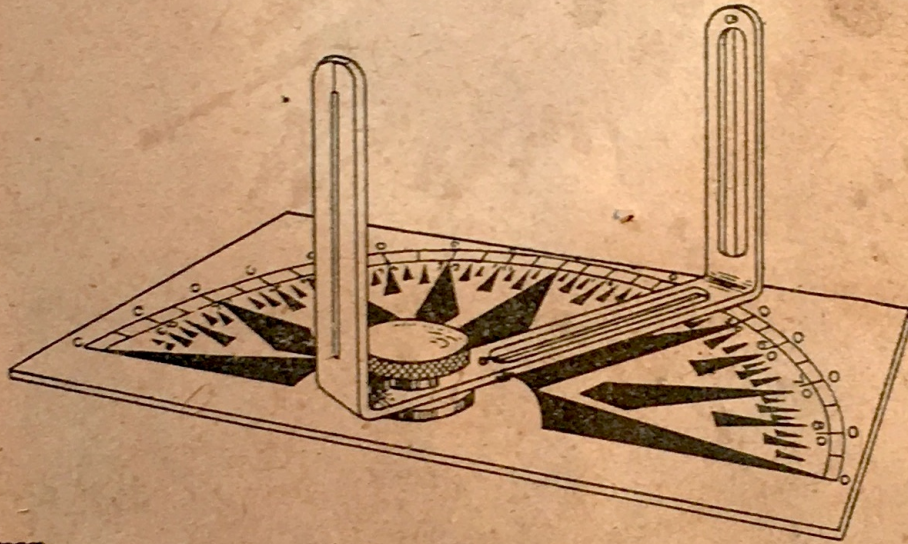


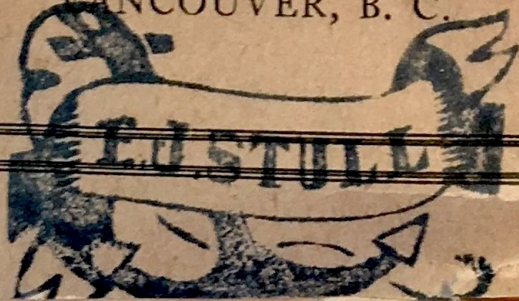
*The*  
**UNIVERSAL  
BEARING  
FINDER**



PATENTED BY  
**CAPT. WALTER WINGATE**  
IN CANADA, THE UNITED STATES  
AND OTHER COUNTRIES



**MacGougan & Steta, Limited**  
DISTRIBUTORS  
VANCOUVER, B. C.





# INTRODUCTION

In the early days aids to navigation were very primitive, comprised essentially in a very elementary Magnetic Compass, wonderful assurance and good luck.

Notwithstanding the wonderful advance in the science of Navigation, the first essential to safety is still the Compass.

Lighthouses, buoys, beacons, and fog-signals are maintained at considerable expense along all the routes followed to any extent by shipping. Even in clear weather the navigator will appreciate any means affording a quick method of fixing the ship's position, particularly in narrow waters.

The position of the Standard and Steering Compasses in most ships does not allow the officer in charge of the vessel's bridge to immediately obtain a bearing of a light or object when first sighted. The Universal Bearing Finder is designed to afford an instant and reliable method of taking one or more bearings of any object sighted, and when used as directed will obviate the possibility of errors being introduced when correcting compass bearings to true or magnetic bearings.

By getting the shadows of the vertical and horizontal wires in complete alignment absolutely accurate bearings can be obtained for finding the error of the Standard Compass. This will be particularly appreciated when the sun is obscured from the Standard Compass, by funnels, ventilators, masts, deck-houses, etc., as frequently happens.

Risk of collision can be almost immediately ascertained by setting the sight-vane on any vessel when first sighted.



The simple design of the instrument insures the cost being kept low, so that it may be within reach of the most junior navigator who feels his responsibility for safe navigation.

### USE OF THE BEARING FINDER.

Any convenient place or places should be selected, and a bracket or brackets affixed to carry the instrument. These brackets must be aligned so that the zero line will be in the true fore and aft line of the vessel. This is for convenience, as any fore and aft or thwart-ship surface will serve equally as well when holding the instrument by hand.

While coasting or in narrow waters the course of the ship should always be laid off on the chart and observations taken at every opportunity to ascertain that the ship is making good her course.

**Caution:** Bearings taken with the instrument should be always read off as **an angle on the bow**, or as an angle to the ship's course.

**To Assemble:** Unscrew the thumb-screw and slip the sight-vane placing the washer under the thumb-screw. The washer is to minimize any binding effect on swinging the sight-vane from left to right.

**To Use:** Place the fore side of the instrument against any fore and aft or thwartship surface. These may be Pilot House windows or Rails.

The correctness of alignment may be tested any time by selecting a distant object right ahead at the same time setting the sight-vane to zero, if the object is still in alignment the surface is correct.

**Thwartship Surface.** If the instrument is placed against a thwartship surface, the zero of the instrument will be in alignment with the ship's head and the sight vane set on any object



will show the angle on the bow. To lay this directly on the chart, reverse the angle on the same side of the zero mark. Suppose for instance, a lighthouse bears two points on the Port bow ( $22\frac{1}{2}$  degrees), move the sight-vane to  $67\frac{1}{2}$  degrees—that is  $22\frac{1}{2}$  from the base—, lay the instrument on the chart bringing any edge of the sight-vane in line with the course line move the instrument along as you would a ruler until the base cuts the object sighted, a line drawn along the base edge of the instrument will be the position line of the vessel. A bearing of another object taken at the same time will give another position line and the intersection of the two lines will be the position of the vessel.

It will be appreciated that once the course has been set any number of bearings may be taken and laid off on the chart without any figuring being involved, reducing any possibility of errors being introduced.

**Use Against a Fore and Aft Surface.** If the instrument is placed against, say, the side window of the Pilot House, the zero mark will be in line with the beam or thwartship line and the sight-vane set on any object will be read off as an angle before the beam.

Take the previous example, an object two points on the bow will be six points before the beam— $67\frac{1}{2}$  degrees. To lay off on the chart move the sight-vane to exactly the same angle  $67\frac{1}{2}$  degrees on the other side of the zero mark, place the instrument on the chart as before and you will find that you get exactly the same result.

Any side of the instrument may be used and after a little practice other uses will be found for the instrument.



For instance, to find the course to steer:— Lay off the course using one side of the instrument as a ruler then set the zero line of the instrument on any meridian cutting the course line move the instrument up the meridian until you can get one side of the sight-vane in line with the course. The reading will be the True Course to which, of course any error of the compass must be applied.

To find the Magnetic Course, with the thumb-screw set up to keep the sight-vane in position lay the instrument over the Magnetic Compass generally printed on the face of the chart, zero line in line with the North and South points the reading under the sighting wire will be the Magnetic Course.

To ascertain risk of collision, place the instrument against any surface and set the sight-vane on the other vessel, if the bearing does not appreciably change there is risk of collision.

The depressions on the even points are for convenience at night getting two and four point bearings. The instrument can be set at any even point without need of light.

### HINTS FOR JUNIOR NAVIGATORS.

**Doubling the Bearing.** Note the time and bearing when first seen, set the sight-vane on twice the angle on the bow; when the object is in line the distance run between sights will be the distance off at time of second bearing.

**The Four Point Bearing.**—i. e., First bearing four points on the bow, the second bearing abeam—is the simplest and most often used, but there is no reason why smaller angles should not be used. Particularly is this the case when passing points with off-lying dangers.

**Position by Cross Bearings:** The greater the angle (up to ninety degrees) between the objects the more reliable the fix. Objects before the beam should be selected in preference to



others. When available the bearing of a third object should be taken as a check. Lay off the bearings as before mentioned; where the position lines cut will be the position of the ship.

**Running Fix:** Lay off the first bearing. From any point on this line of bearing lay off the estimated course and distance made good between observations; through the point so found draw a line parallel to the first line of bearing; the point of intersection of the second line of bearing with this line will be the position of the ship.

**To Find the Distance a Ship Will Pass Off Any Point When Abeam, by Traverse Table:** With the angle on the bow as a course the distance off when first fixed in the distance column; the departure will be the distance off when abeam.

**To Find the Course to Steer to Pass a Given Distance Off, by Traverse Table:** With the distance off at fix in the distance column the distance required to pass off when abeam in the departure column; the number of degrees in the course column will be the angle on the bow on which to bring the object in order to pass the given distance off. The departure latitude will be the distance required run before the object will be abeam.

**Charts:** Always use a chart on the largest convenient scale possible; soundings and the coast line are shown in greater detail. A good guide for reliability is the regularity of soundings. Distrust blank areas off a rocky coast.

In laying off a course keep well outside the ten-fathom line off a rocky coast. If you have to navigate inside it, do so with caution—use your lead line.



# TESTIMONIALS



Consolidated Whaling Corporation,  
Limited  
Victoria, B. C.

Sept. 11th, 1919.

Dear Sir:

I have had the Bearing Finder you supplied last April in use for several months now, and find it a most valuable, useful and convenient instrument. Its simplicity and cheapness should assure you a ready market.

W. F. BILLINGTON,  
Master S.S. Gray, Consolidated Whaling Corporation.

Department of the Naval Service, Canada  
H. M. C. Dockyard, Esquimalt

August 12th, 1919.

Dear Sir:

I received your letter enclosing the blueprint of your Bearing Finder, which I have examined with interest. The details of the instrument appear to have been very carefully thought out, and in my opinion it should prove very useful, especially for coastal work. At the price you name I should think you will be able to sell this freely.

E. H. MARTIN,  
H. M. C. Dockyard, Esquimalt, B. C.

Grand Trunk Pacific Coast Steamship Co.  
Limited  
Vancouver, B. C.

July 31st, 1919.

Dear Sir:

The Protractor with sight-vanes, as furnished to this vessel by you, I find to be of much service and convenient in taking angles from the ship's head, for finding distance off, etc. Also in looking over drawings of your improved instrument, for which I notice a patent has been granted you. This improved instrument should find a ready sale. It can be used from any position on the vessel, and should especially find favor on vessels not having a navigating bridge. A bearing can be accurately taken from wheel-house, and this feature should encourage the general use of the instrument with the smaller coasting vessels, as well as with other vessels.

D. MACKENZIE,  
Master S.S. Prince Rupert.



S. Cullington, Marine Surveyor  
Vancouver, B. C.

August 1st, 1919.

Dear Sir:

I have examined a Compass Bearing device patented by W. Wingate, Esq., R.N.R., the same being an improvement on many such as I have personally used and examined. This instrument should prove invaluable, especially to navigators of small vessels where their compasses are situated in such a position as being of little use for bearing purposes.

S. CULLINGTON,  
Marine Surveyor.

Shipping Federation of British Columbia  
Incorporated  
Vancouver, B. C.

July 29th, 1919.

Dear Sir:

One of the advantages of your Bearing Finder is that it can be placed conveniently for getting the correct bearing. It must be useful and valuable to all coasting vessels, more especially to the many tug-boats on this coast whose compasses are inside of their wheel-houses inconveniently placed for taking bearings. Its simplicity and small cost should commend itself to the coastwise and tug-boat fleet.

JAMES R. STEWART,  
Nautical School, Vancouver, B. C.



E.J. STULL  
Vancouver Harbour Commissioners  
Vancouver, B. C.

To Whom It May Concern:

I have seen the "Bearing Plate" brought out by Lieut. W. Wingate, R.N.V.R., and consider that in the case of vessels where the standard compass has not got an all-round view, or is not fitted with sight-vanes, a device such as the one under notice is entirely indispensable for those who propose to navigate their vessel in a proper manner, the absence of accurate bearings being the most fruitful cause of all accidents.

A. HUNTLEY REED, Comm. N.R.N.,  
Harbour Master, Vancouver, B. C.