

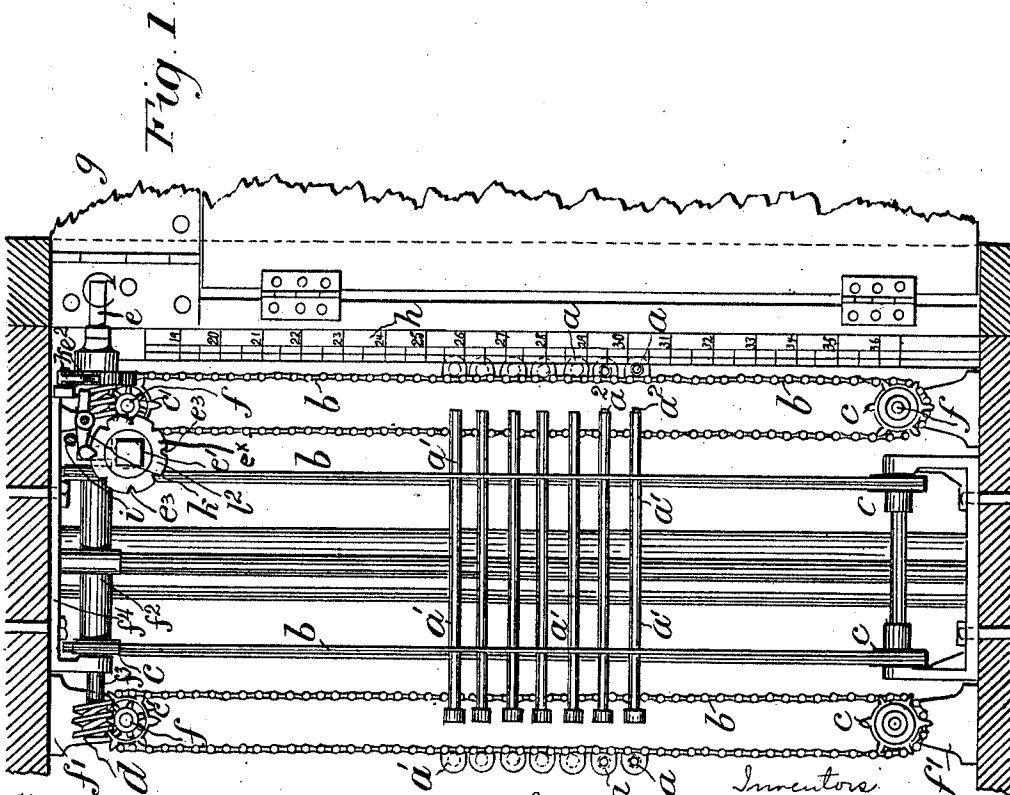
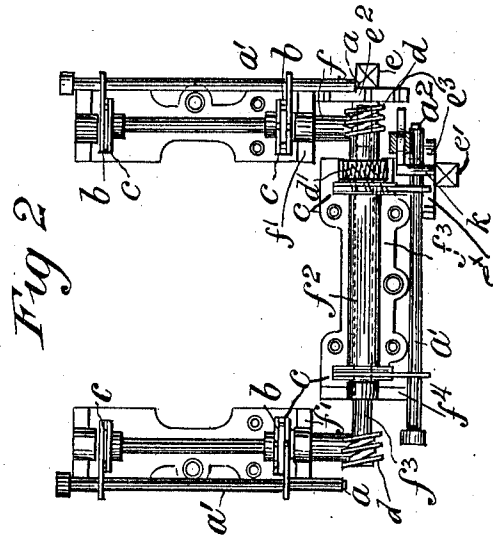
L. W. P. CHETWYND & F. W. CLARK.
MARINER'S COMPASS.

APPLICATION FILED JAN. 28, 1908.

988,626.

Patented Apr. 4, 1911.

2 SHEETS—SHEET 1.



Witnesses
J. M. Winkcoop.
L. B. Milton

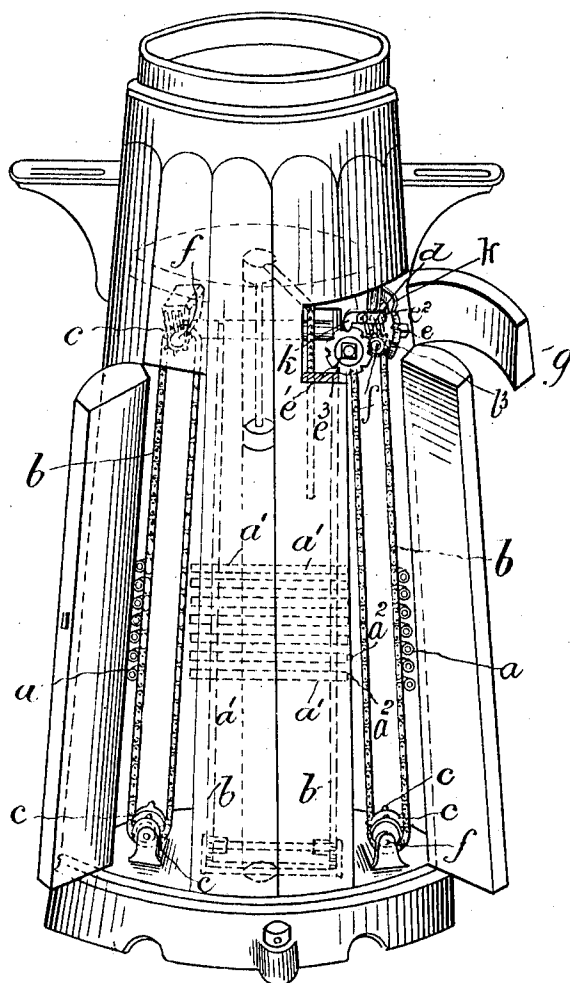
Inventors
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By Knight & Day attorneys.

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2 SHEETS—SHEET 2.

2 SHEETS--SHEET 2.

Fig 3.



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UNITED STATES PATENT OFFICE.

LOUIS WENTWORTH PAKINGTON CHETWYND, OF KINGSTON-UPON-THAMES, ENGLAND,
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MARINER'S COMPASS.

988,626.

Specification of Letters Patent.

Patented Apr. 4, 1911.

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To all whom it may concern:

Be it known that we, LOUIS WENTWORTH PAKINGTON CHETWYND, residing at Kingston-upon-Thames, in the county of Surrey, England, and FRANCIS WOOD CLARK, residing in the county of the city of Glasgow, Scotland, both subjects of the King of England, have invented certain new and useful Improvements in Mariners' Compasses, of which the following is a specification.

This invention relates to apparatus of the kind in which the controlling magnets of a mariner's compass are supported and may be raised or lowered by gearing, and positively locked in position after adjustment.

According to our invention, we arrange to carry the magnets horizontally on chains or similar means running vertically over sprocket wheels on spindles which are mounted within the binnacle and driven by worm gearing, thus simplifying the methods of adjusting, so that an officer to correct an error caused by the change of the ship's magnetism etc can do so without removing or adding to the number of magnets placed by the compass adjuster. We also arrange the winding wheels so that the officer knows by consulting his compass instructions the turns necessary to raise or lower his magnets to eliminate the error. This improved arrangement also allows the adjuster to have his eyes on the card or azimuth corrector, while at the same time he raises or lowers the magnets, thus allowing him to diminish or increase the power of the magnets to exactly what is required to get a fine adjustment.

In order that our invention may be properly understood and readily carried into effect, we have hereunto appended two sheets of drawings in which,

Figure 1 is a vertical section of the lower part of a binnacle to which the improvements embodying our invention are applied; Fig. 2 is a plan of the same with the top removed; and Fig. 3 is a perspective view drawn to a reduced scale of a binnacle illustrating the application and disposition of the various parts constituting the invention.

Referring to the several figures disclosing the structure of the invention, the same comprises a plurality of magnetic bars a , held within tubes a' that are carried by endless chains b , which are disposed in relatively fore and aft positions. Each of the chains

b is adapted to travel on upper and lower sprockets c , said sprockets being mounted on shafts f that are in turn journaled within brackets f' suitably secured within the binnacle casing. Each of the upper shafts f is fitted on one end with relatively small sprocket c' and said sprockets c' are engaged by worms d , carried by the shaft f^3 . The shaft f^3 is suitably journaled within a frame f^4 , which frame is fixed within the binnacle casing. On one end the shaft f^3 is squared as at e , or otherwise designed, whereby to receive a crank or other suitable actuating mechanism. It will be understood that from the mechanism above described, that any turning of the shaft end e will effect to actuate the magnet carrying chains b .

Coöperating with the sets of magnetic bars a is a single set of like magnetic bars a^2 disposed athwartship and which are held within suitable containers a' , that are carried by chains b , which chains are in turn mounted to travel upon upper and lower sprockets c , after the manner above described. The upper pair of sprockets c , in this latter instance, are fixed upon a sleeve f^2 , which is in turn mounted to rotate upon the shaft f^3 . The means for rotating said sleeve f^2 consists of a worm d' that is carried upon an independently operated shaft e' . (See Fig. 2.)

For holding the shaft f^3 against accidental movement, said shaft is provided with a disk e^2 having a plurality of notches e^3 to be engaged by a pawl k , as shown; and the movement of the sleeve f^2 is prevented by a second pawl k which engages with a disk e^x on the shaft e' having the worm d' . Said disk e^x has notches e^3 for the second pawl k .

In proceeding to adjust by the athwartship magnets a^2 we bring the magnet carriers to the central position as shown in Figs. 1, and 3. The center of each set should be in the central position of the vertical scale h . The first magnets a are then placed in the lower tubes or carriers a' of the set, and if found insufficient to make the necessary correction, the second tube is used, and so on until the complete set is filled up. If still found insufficient, the shaft e is turned in the direction of the arrow to bring the magnets a nearer the card until the correction is perfect. In making a second adjustment, in most cases it will be only necessary

to open the door *g* and actuate the shaft to lower or raise the magnets so as to eliminate any small error that has occurred.

The vertical scale *h* shows in inches the distance of the magnets *a* from the compass card. When the adjustment is complete it is necessary that the pawls *k* are properly engaged with the notches *e*³ of the locking disks *e*².

10 Claims.

1. In a binnacle for mariners' compasses, a plurality of endless chain belts arranged to move in vertical planes, shafts about which said chains are passed, sprocket wheels 15 mounted in pairs upon said shafts and adapted to support and actuate the chain belts; worm gears for driving said shafts independently of each other; a door for the binnacle; and means carried by the door 20 to keep it from closing except when the sprocket wheels are in certain predetermined positions, whereby said endless belts are held against movement when the door is closed.

2. In a binnacle for a mariner's compass, in combination, a plurality of upper horizontal shafts, each lower shaft being disposed vertically below an upper shaft, wheels mounted 30 in pairs on said shafts, endless belts supported and actuated by said wheels, gears for driving said shafts, a door for the binnacle, and means carried by the door to prevent it from closing except when the said 35 wheels are in certain predetermined positions, whereby said belts are held against movement when the door is closed.

3. In a binnacle for a mariner's compass, in combination, three upper horizontal shafts, three lower horizontal shafts, each 40 lower shaft being disposed vertically below an upper shaft, sprocket wheels mounted in pairs on said shafts, endless chain belts supported and actuated by said sprocket 45 wheels, means for rotating two upper shafts simultaneously, independent means for rotating the third upper shaft, a door for the binnacle, and means carried by the door for preventing movement of said belts when the 50 door is closed.

4. In a binnacle for a mariner's compass, in combination, three upper horizontal shafts, three lower horizontal shafts, each 55 lower shaft being disposed vertically below an upper shaft, sprocket wheels mounted in pairs on said shafts, endless chain belts supported upon and actuated by said sprocket wheels, worm gears adapted to impart rotary movement to two of said upper shafts 60 simultaneously, and an independent worm gearing for rotating the third upper shaft.

In witness whereof we have hereunto set our hands in the presence of two witnesses.

LOUIS WENTWORTH PAKINGTON CHETWYND.
FRANCIS WOOD CLARK.

Witnesses to the signature of Louis W. P. Chetwynd:

JOSEPH MILLARD,
WALTER J. SKERTEN.

Witnesses to the signature of Francis Wood Clark:

JOHN LIDDLE,
JOHN T. LIDDLE.