

(No Model.)

2 Sheets—Sheet 1.

J. K. ADELSBERG.
SHIP'S TELEGRAPHIC APPARATUS.

No. 544,876.

Patented Aug. 20, 1895.

Fig. 2.

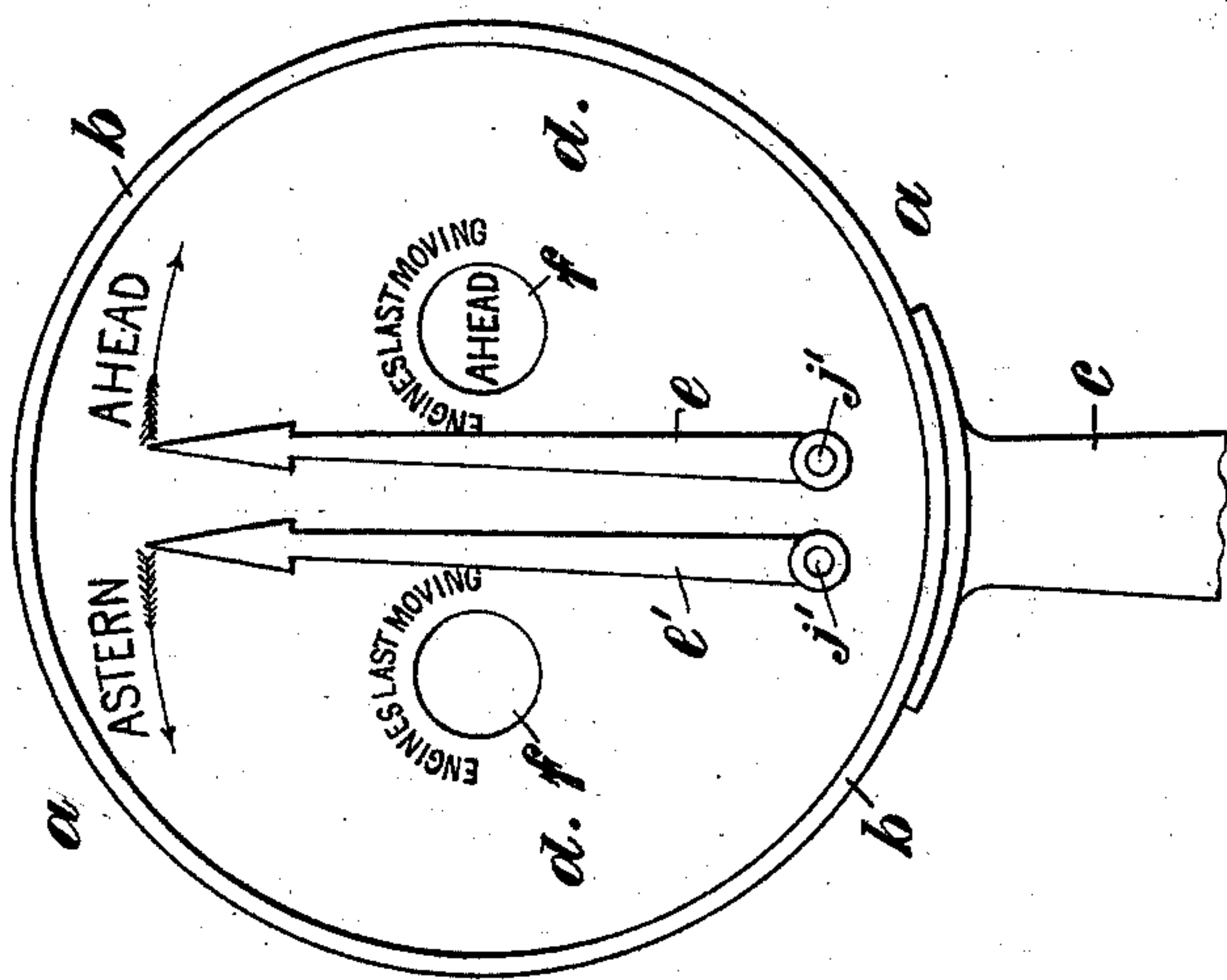
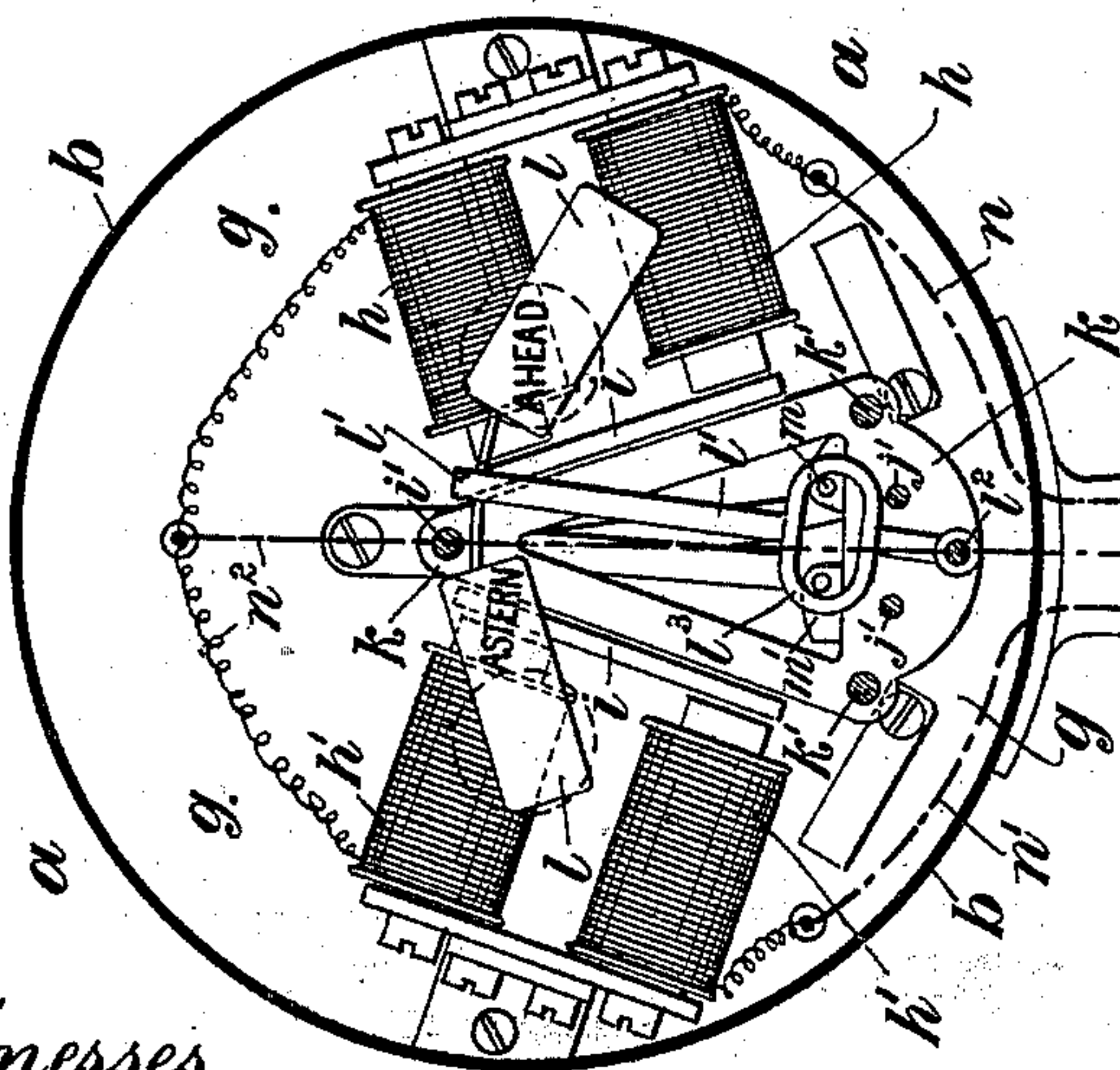


Fig. 1.



Witnesses.

H. van Dusen
E. H. Sturtevant

Inventor.
Johannes Karl Adelsberg

by *Reichardt & Co.*
Attorneys

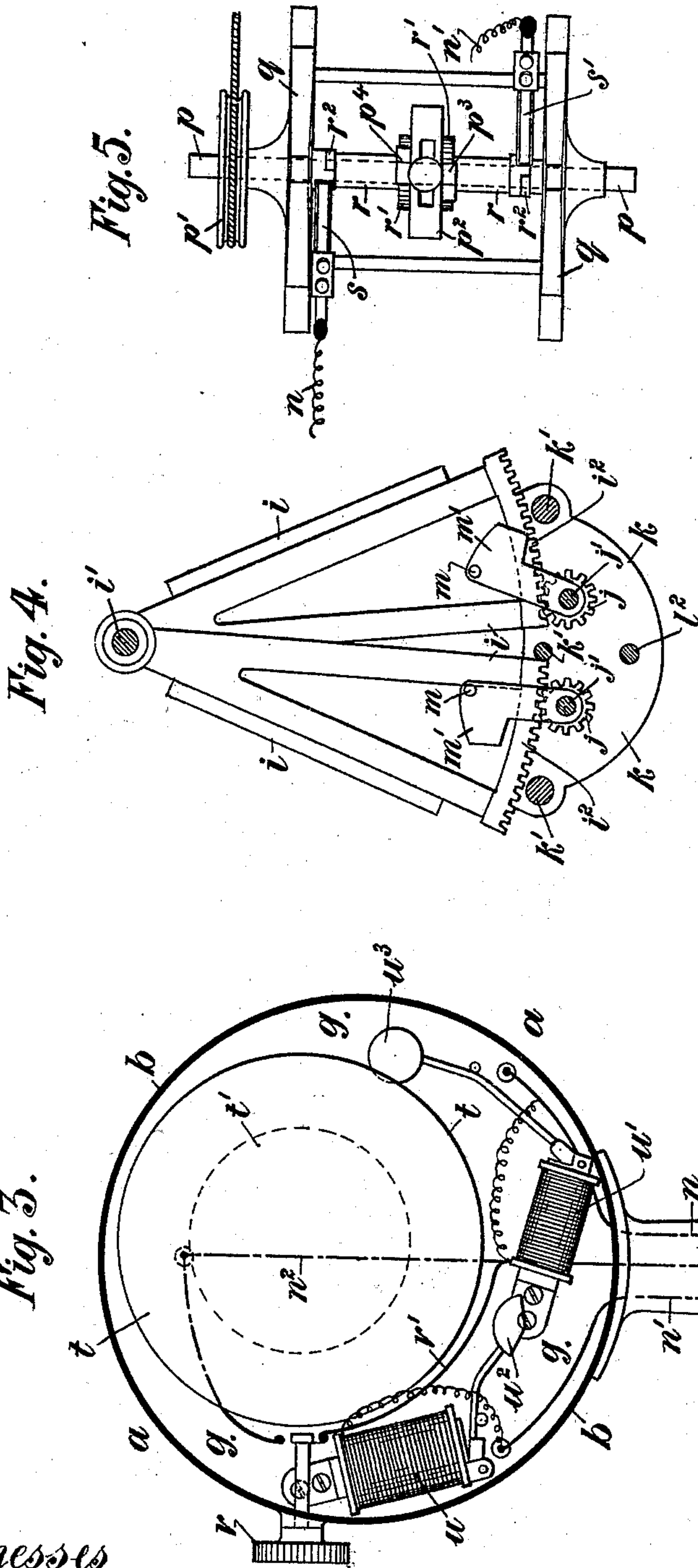
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Witnesses
H. van Olsene
E. H. Sullivan

Inventor.
Johannes Karl Adelsberg
by *[Signature]*
Attorneys

UNITED STATES PATENT OFFICE.

JOHANNES KARL ADELSBERG, OF LIVERPOOL, ENGLAND, ASSIGNOR TO THE
WALKER'S ENGINE SPEED INDICATOR AND RECORDER COMPANY, LIM-
ITED, OF DURBAN, NATAL.

SHIP'S TELEGRAPHIC APPARATUS.

SPECIFICATION forming part of Letters Patent No. 544,876, dated August 20, 1895.

Application filed March 16, 1895. Serial No. 542,041. (No model.)

To all whom it may concern:

Be it known that I, JOHANNES KARL ADELSBERG, a subject of the Queen of Great Britain and Ireland, residing at Liverpool, in the county of Lancaster, England, have invented new and useful Improvements in Ships' Telegraphic Apparatus, of which the following is a specification.

The improvements which form the subject of this invention relate to ships' telegraphic apparatus, and the chief object of this invention is to provide certain improvements in such apparatus by which the action of the magnetic operating mechanism, and so the indication of the direction in which the engines are moving and the rate of speed or revolutions of the engine, are rendered more reliable and certain.

According to this invention the chief improvement consists in the employment, in combination with the electromagnets, of armatures which have small amount of movement, so that at all times they are within a short distance of the poles of such magnets, whereby the power of the magnets upon the armature is always great, even when the armatures are at their farthest distance from the pole; and in conjunction with this construction, and interposed between the armatures and the pointers actuated thereby, toothed quadrants and pinions are employed by which, by the small movement of the armatures, a relatively large movement of the pointers is effected.

Referring now to the drawings which illustrate this invention, Figure 1 is a front sectional elevation, Fig. 2 is a front outside elevation, and Fig. 3 a back sectional elevation showing the apparatus, while Fig. 4 is a detail of same to a larger scale. Fig. 5 shows a plan of the contact making and breaking device.

In the drawings, *a* is the "bridge" instrument, in charge of the captain or other person. It consists of a case *b* on a stand *c*, closed at the back by a plate and at the front by a dial-plate *d*, over which the pointers *e e'* work, and having windows *f* in it, while the magnets, gongs, and parts hereinafter described are supported on a vertical diaphragm-plate *g* in the case *b*.

h h' are the "ahead" and "astern" electromagnets.

i are two armatures suspended loosely from the pin *i'*, and having each a rack *i²* at the bottom which engages with a pinion *j* on a shaft *j'*, which shafts pass through the front dial *d*, and on the ends of which the pointers *e e'* are fixed. By this tooth-gearing and arrangement of parts the armatures may always be close to the magnets and have when acted upon only a small movement, yet the tooth-gearing gives the pointers a relatively long and easily-distinguishable stroke. The shafts *j'* are supported by triangular-shaped frames *k*, which are carried or supported from the plate *g* by the pin *i'* and pins *k'*, and between these frames the armatures, with their racks and pinions *j*, are arranged and work.

l are the direction-dials used and working in connection with the windows *f*, one having the word "ahead" on it and the other "astern," the said dials being supported upon an upright oscillating bar *l'*, loosely mounted on the pin *l²*. This bar has a loop *l³*, in which pins *m*, mounted on the arms *m'*, fixed upon the shafts *j'*, work, said pins coming within said loop and adapted to operate as hereinafter described.

The two sets of magnets *h h'* are connected with the contact device by wires *n n'*, the wires *n* being connected with the magnets for working their ahead pointer and dial, and the wire *n'* for working the astern pointer and dial, while a third wire *n²* is a common return to both sets of magnets, and upon it, on the column *c*, an ordinary switch *o* is provided to break the circuit and put the instrument out of action whenever required. The ahead magnets *n* for working the ahead pointer *e* and dial and those for working the astern pointer *e'* are only operated and have electricity passed through them when the engines are moving ahead or astern, respectively, and the contact-making device is so arranged as to do this.

The particular instrument shown in Figs. 1 and 5, which, however, forms no part of this invention, consists as follows: A shaft *p*, driven by a pulley *p'* by a rope from the engine, is mounted upon supports *q*, and has in

the center between these supports a disk p^2 fixed upon it, on which disk pawls p^3 and p^4 , arranged one on either side and disposed in opposite directions, are provided. Upon this shaft p sleeves r are loosely mounted, having two ratchet-wheels r' , adapted to work in connection with the pawls p^3 p^4 , and at the opposite ends projecting parts r^2 , which are adapted in each revolution to come into contact when rotated with a brush or spring s or s' arranged, respectively, in connection with the wires n and n' . The action of this device is that according to which direction the shaft p is driven or rotated so will one or other of the pawls p^3 or p^4 engage with its ratchet-wheel r' and rotate one or other of the sleeves r and contact projections r^2 , and so cause the circuit between this instrument and one or other of the sets of electromagnets h or h' in the instrument a to be energized and put in action. While one pawl is in operation it will be evident the other will ride freely over the teeth of its ratchet-wheel r' and that ratchet-wheel and its contact device r^2 remain inoperative.

In connection with the apparatus sounding-gongs t t' of different sizes and tones are adapted to be operated by electromagnets u u' through hammers u^2 u^3 , current being taken to these magnets from the wires n or n' to energize them, while a contact-making device v is provided on the return-wire v' , which is connected with the common return-wire n^2 to cut off the bells altogether when required. By this arrangement the magnets u and the big gong t will be set in action when the ahead-indicating part of the apparatus is in action, while when going astern and the astern indicator is in action the magnet u' will be set in action, and the small or shrill gong t' sounded.

In operation, when the the engines are going ahead, a contact will be made each revolution by the contact-maker, and current (generated from a suitable source) passed through the ahead magnets h and then cut off. While the current is flowing the armature i , connected with the magnets h , being close against the poles, is attracted and drawn toward them, so moving the rack i^2 , and this motion is imparted to the pinion j and shaft j' and the pointer e connected with it, and through this gearing the movement of the pointer h is increased and rendered of considerable length; and in this action, also, the bar l' , carrying the dials l , will be moved simultaneously with

the armature by the magnet as the arm m' , carrying the pin m , which lies within the loop l^3 , is on the shaft j , which was operated by the magnets, and thus through the pin m it will be moved to one side, so as to show the word "ahead" through the ahead window f , nothing being seen at the other window. This movement of the dials l takes place in the first stroke or action of this set of magnets and they remain there until the other opposite set of magnets h' are energized and act, as the repeated movement of the pin m at each revolution, so long as this ahead revolution is being made, does not act upon any part of the arm l' , but moves freely in the loop l^3 . When, however, the reverse revolution is in operation and the engine going astern, then the other pin m , when operated by the magnets n' , will pull the arm l' over in the opposite direction; but while the engine is at rest the direction at which the engine was last running will be shown by the word appearing at the window connected with that direction of movement of the engine.

The indications, therefore, afforded by this instrument are that when the engines are going ahead the ahead pointer e moves from its vertical position to the right each revolution, its return action being effected by a spring pulling back the armatures to their normal position and the pointer to the vertical position, and there will also be shown at the window f on the ahead side the word "ahead," which will remain there when the engine is stopped. When the engines are going astern the pointer e remains stationary and e' is moved and the word "astern" appears at the other window f .

What is claimed in respect of this invention is—

The improvement described in connection with ships' direction indicators, consisting of the combination of electro magnets h h' ; pivotally mounted and vibrating armatures i ; toothed racks i^2 on said vibrating armatures; pinions j meshing with the said racks; shafts j' on which said pinions are mounted, pointers e e' mounted on said shaft j' , a dial plate d having on it the words "Ahead" and "Astern," and over which said pointers move; substantially as described.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

JOHANNES KARL ADELSBERG.

Witnesses:

FREDERICK JOHN CHUSHOUGH,
JOHN HINDLEY WALKER.