

H. A. SEVERN.
Mariner's Compass.

No. 215,403.

Patented May 13, 1879.

FIG. 1.

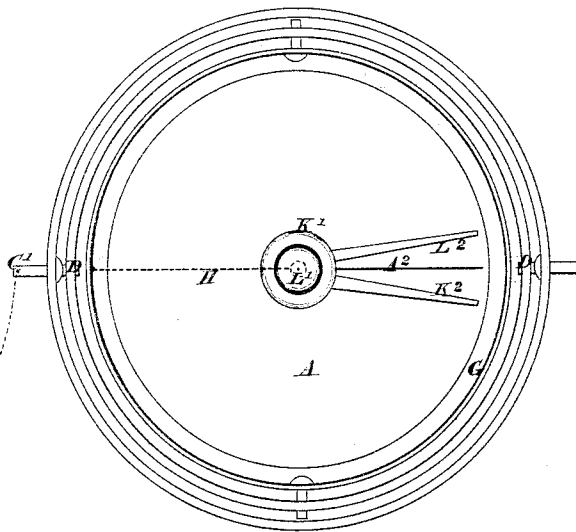
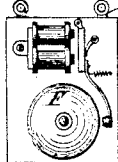
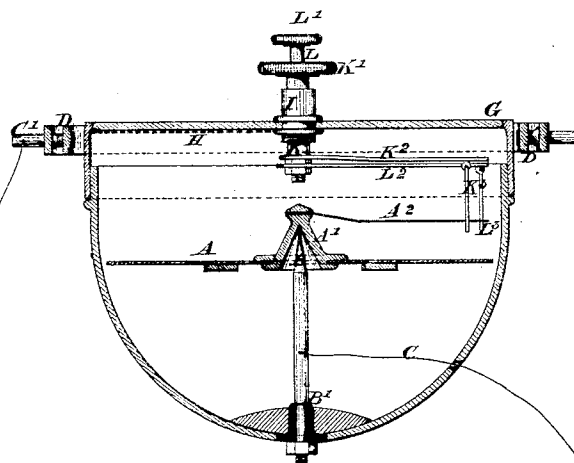


FIG. 2.



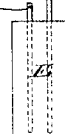
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UNITED STATES PATENT OFFICE.

HENRY A. SEVERN, OF NO. 9 EARL'S COURT SQUARE, COUNTY OF MIDDLESEX, ENGLAND.

IMPROVEMENT IN MARINERS' COMPASSES.

Specification forming part of Letters Patent No. **215,403**, dated May 13, 1879; application filed March 11, 1879; patented in England, January 17, 1879.

To all whom it may concern:

Be it known that I, HENRY AUGUSTUS SEVERN, of No. 9 Earl's Court Square, in the county of Middlesex, England, have invented an Improvement in Mariners' Compasses, and in appliances used in connection therewith for indicating deviations from the ship's true course; and do hereby declare that the following description, taken in connection with the accompanying drawings, hereinafter referred to, forms a full and exact specification of the same, wherein I have set forth the nature and principles of my said improvement, by which my invention may be distinguished from others of a similar class, together with such parts as I claim and desire to secure by Letters Patent—that is to say:

My invention has for its object to provide means whereby any deviation between optional limits from the prescribed course of a vessel at sea is indicated to the captain or officer in charge by means of an audible or visible signal at any convenient part of the vessel, so that he may at once be apprised thereof, and thus the danger or loss of time attendant on the ship's continuing for a length of time on a wrong course unnoticed be obviated.

For this purpose I avail myself of the practically stationary position of the card of the compass in respect of the magnetic meridian, and of the changing position of the box or binnacle surrounding the card as it shifts with the vessel, in order to cause certain electrical contacts to be made when the vessel deviates to a certain extent from its course, and by such contacts I cause an electrical circuit to be closed, in which is included an audible or visible signal, actuated by the current, means being provided for shifting such contacts at will to any point of the circumference of the binnacle, or to prevent their occurrence altogether when not required.

According to the arrangement which I employ, the compass-card is supported upon a metal point, which is insulated from the metallic part of the bowl and gimbals, and is connected to the one end of a wire circuit in which is included a battery and a signaling apparatus actuated thereby, and the other end of which circuit is electrically connected to a spin-

dle passing centrally through the glass lid of the compass. The spindle is held in the lid so as to be rotatable therein and beneath it. It has a metal arm or index projecting radially from it, so that such index can be turned by means of its spindle to any point of the compass. A second such metal index is fixed to a metal sleeve fitting the spindle, so as to be rotatable thereon, and also passing through to the outside of the lid, so that both indexes can be set independently to any desired angular position relatively to each other by means of the spindle and the sleeve. The center of the compass-card, in which the metal point bears, is also of conducting metal, insulated from the needles themselves, but in electrical connection with a metal contact piece or arm projecting from the upper face of the card—by preference at the north point thereof. The before-mentioned indexes have suspended loosely from them small pieces of platinum wire, so that whenever, by the rotation of the bowl in one direction or the other, as it shifts with the vessel, the one piece of wire or the other comes in contact with the arm of the card, the electric circuit will be closed, and the current will actuate the signal.

Thus, in operating with this apparatus, after the captain or officer has determined the course of the ship, he sets the two indexes so that each one is one or more points away from each side of the contact-arm of the compass-card, the amount depending upon the limits within which a deviation may be allowed. Should now the course of the ship be altered to the extent of such limit, the before-described contact will be made, and the officer will be apprised thereof by the actuation of the signal.

The above arrangement may either be applied to the ship's compass at the helm, in which case, after the indexes have been set, the external buttons for them may be inclosed by a locked glass cover, or the arrangement may be applied to a special compass in the captain's or officer's cabin, in which case the whole apparatus, including the battery and the signaling apparatus, may conveniently be inclosed in a portable box.

By preference an electric-alarm bell is employed as the signaling apparatus, and in this

case two bells of different sound may be provided—one for indicating the deviation in one direction, and the other for that in the other direction.

When it is only desired to indicate the deviation of the ship's course in one direction, the second index may be turned out of the way; or both indexes may be capable of being raised, so that their pendent wires cannot make contact with the arm of the card when no signaling is desired.

Figure 1 of the accompanying drawings shows a plan, and Fig. 2 a vertical section, of a mariner's compass with my before-described invention applied thereto.

The compass-card A has a metal center, A¹, which rests on the metal point B, and has a metal arm, A², projecting from it over the upper surface of the card, preferably at the north point. The point B is insulated at B' from the bowl, and has connected to it the one end of the circuit-wire C, leading to the battery E and electric bell or other signaling apparatus F, the other end of the circuit-wire being connected at C' to the gimbals D of the compass.

From the lid G of the compass, which is in electrical connection with the gimbals D, a metal wire or strip, H, (represented by a dotted line,) passes across the glass to the center, where it is electrically connected to the metal socket I, fixed in the glass. Through this socket passes a tubular metal piece, K, having at its outer end a button, K¹, and on its inner end a metal arm, K², from which is loosely suspended a piece of thin platinum wire, K³. Through the tubular piece K passes a metal rod, L, having a button, L¹, and on its inner end a metal arm, L², from which is suspended the platinum wire L³.

The tube K being free to turn in the socket I, and the rod L being free to turn in the tube, while all three are in electrical contact with each other and with the metal strip H, it will be seen that the arms K² and L² can be set to any desired angle on either side of the arm A², and that should the bowl be turned in the one direction or the other relatively to the card A to such an extent as to cause the arm A² to come in contact with the one or the other of the wires K³ or L³, the electric circuit formed by the wire C will be closed, and consequently the bell or other signal at F will be actuated.

Thus, assuming that the captain or officer in charge, after determining the course on which the ship is to be kept, sets each of the arms K² L² to an angle on either side of the arm A² corresponding to the limits within which a deviation from the prescribed course may be allowed, then on these limits being exceeded a contact will be made and a signal given, as above described, whereby the captain or officer will be apprised of the fact.

The tube K, together with the rod L, can slide up and down through the socket I, so that when it is not desired to use the apparatus the arms K² L² can be raised sufficiently

to lift the wires K³ L³ out of the reach of the arm A²; or the one or other of the arms may alone be raised when it is desired to indicate the deviations of the ship's course in one direction only, as before mentioned.

In order to provide two bells or other signals—one for indicating the deviations to port, and the other for those to starboard, as before mentioned—two separate electrical circuits with a battery and signal would be required, the one circuit being connected to the tube K with its arm K², and the other being connected to the rod L with its arm L², while the other terminal of both circuits would be connected to the point B. In this case the tube K and rod L would, of course, have to be insulated from each other.

Instead of providing only one bell in the electrical circuit or circuits, there might be provided two or more at different parts of the ship, such as in the captain's cabin and in the cabin of the second officer, so that each might be apprised of the deviations from the prescribed course.

It will be evident that numerous other modifications might be adopted for carrying my invention into practice. Thus each of the arms K and L might be made to constitute the two insulated terminals of either a single electrical circuit common to both or of two separate circuits, and the compass-card be simply provided with a contact-piece which, in coming in contact with the two terminals of the one or other arm, would close the circuit and give the desired signal. Also, in place of having the two arms connected to the center of the compass-lid, they might be carried by slides capable of being shifted round the inner circumference of the compass-bowl; but I prefer the arrangement above described as being the most simple.

I am aware that a compass has been invented in which the card carries a contact-piece, and contact-points are arranged in a circle in the path of said contact-piece, thus requiring a multiplicity of terminals, and I do not claim such invention. I obviate this multiplicity of terminals by using only two adjustable central points or circuit-terminals, thus greatly lessening the cost and increasing the convenience of the compass.

Having thus described the nature of my invention, and in what manner the same is to be performed, I claim—

1. In mariners' compasses, an arm or contact-piece carried by the compass-card, in combination with one or more adjustable insulated arms or contact-pieces carried by the compass lid or bowl, and connected to an electrical circuit in which is included one or more electrical bells or other electrical signals, whereby the angle may be regulated within which deviation from the ship's course may be allowed, and deviation in excess of said angle indicated by the contact of the contact-pieces on the card with either of the adjustable arms or con-

tact-pieces, and the consequent closing of the electrical circuit and operation of the signal included therein.

2. A compass-card with arm or contact-piece in electrical connection with the one pole of a battery, in combination with one or more adjustable insulated arms carried by the compass bowl or lid, and in electrical connection with the other pole of the said battery, and with an electrical signaling-instrument, substantially as and for the purposes herein set forth.

3. The combination of the arm A^2 , carried

by the compass-card A , and connected to the one pole of a battery, E , with the two adjustable arms $K^2 L^2$, connected to the other pole of the battery E and the signaling-instrument, substantially as herein set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 13th day of February, 1879.

HENRY A. SEVERN.

Witnesses:

CHARLES DENTON ABEL,
HARRY EDWARD HOPKINS.