E. S. RITCHIE.

MAGNETS FOR MARINERS' COMPASS.

No. 184,300. Patented Nov. 14, 1876.

Fig. 1.

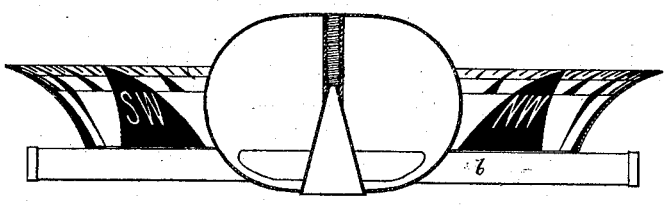
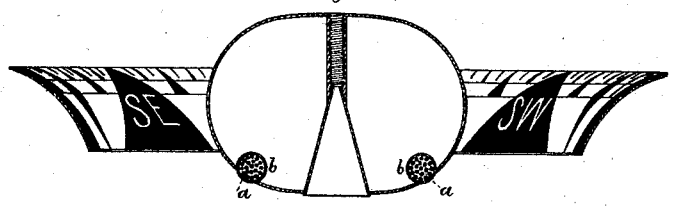


Fig. 2.



Witnesses
L. M. Piper
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UNITED STATES PATENT OFFICE.

EDWARD S. RITCHIE, OF BROOKLINE, MASSACHUSETTS.

IMPROVEMENT IN MAGNETS FOR MARINERS' COMPASSES.

Specification forming part of Letters Patent No. **184,300**, dated November 14, 1876; application filed May 13, 1876.

To all whom it may concern:

Be it known that I, EDWARD S. RITCHIE, of Brookline, of the county of Norfolk and State of Massachusetts, have invented a new and useful Improvement in Magnets for Mariners' Compasses; and do hereby declare the same to be fully described in the following specification and represented in the accompanying drawings, of which—

Figure 1 is a longitudinal section, and Fig. 2 a transverse section, of a compass-card provided with my improved magnets, the improvement having special reference to such magnets as are usually employed in what are termed "liquid compasses," although it is not confined to such. Heretofore each of such magnets has been a single bar, or has been composed of plates of steel placed in vertical or horizontal planes.

My invention or improved magnet, which, to distinguish it from others, I term the "fascicular magnet," is composed of a series of separate drawn wires of steel, *a*, laid parallel to or side by side with each other, and secured together by being arranged and inclosed in a tube, *b*, or by other suitable means.

I have found, by trial, that a magnet so made of steel wires is capable of receiving and of retaining a higher charge of magnetism (in fact, it is generally about thirty per cent. stronger in polar force or attractive power) than when made of laminæ, or of a single bar of equal weight of steel of same length. This I have reason to believe is due to the drawing of the wire, and the consequent arrangement of the molecules of the metal, as compared with rolled plate or sheet steel, and also on account of the increase in the surfaces of steel used. I presume, also, that there is an advantage gained by greatly increasing the number of pieces in which the bundle can readily be made.

I have found, by trial, that drawn steel wire receives a much more uniform hardening, and that it is far less bent or changed in form by the process of hardening, and that such wires receive and retain a far more uniform and equal magnetic charge than thin plates of rolled steel, in consequence of which the danger of breakage incident to the latter, and the injurious effect upon each other which plates of unequally-magnetized steel have, are almost, if not entirely, removed by my improvement.

I claim as my invention—

The fascicular magnet, substantially as described—that is, as composed of a series of steel and magnetized wires laid parallel to each other, and either bound or fastened together, or inclosed in a case, as set forth.

EDW. S. RITCHIE.

Witnesses:

R. H. EDDY,

J. R. SNOW.