

## LIGHTWEIGHT OSCILLATOR

Date of design:- 1930.

Where fitted:- Type 106.

This is a new type of oscillator working on an electro magnetic principle. The weight of this oscillator is only 70-lbs. as opposed to the 11 cwt. of the Fessenden type oscillator.

The oscillator consists of two stainless steel diaphragms (1)(2) with alternating current coils (3)(4) wound in the grooves of blocks of stalloy stampings (6) which are brazed to the inner surface of the diaphragms. The two diaphragms are bolted together forming an air tight chamber, the clearance between the pole faces being 0.024-inch. The chamber thus formed has air pumped into it through the nozzle (5) so that the internal pressure is 50-lbs. per square inch. At this pressure the clearance between pole faces will increase to 0.028-inch.

Alternating current at about 500 cycles/sec is passed through two windings (3)(4) in parallel, the exact frequency depending on the resonant frequency of the oscillator. The coils are so arranged that when current is flowing the diaphragms (1)(2) are mutually attracted and when current is not flowing they spring back past their normal position. Therefore in every cycle of A. C. there will be two attractions and the transmitting note frequency will therefore be twice the alternator frequency. This oscillator having two diaphragms will transmit in two directions at once and gives good all-round transmission, except astern, when fitted with its plane in the vertical plane containing the fore and aft line. A second oscillator may be fitted with one diaphragm facing aft to overcome this.

When diving deep the diaphragms are forced inwards but at depths up to 300 ft. the clearance between pole faces is sufficient for signalling provided the air pressure of 50-lbs. per square inch is maintained inside the oscillator.

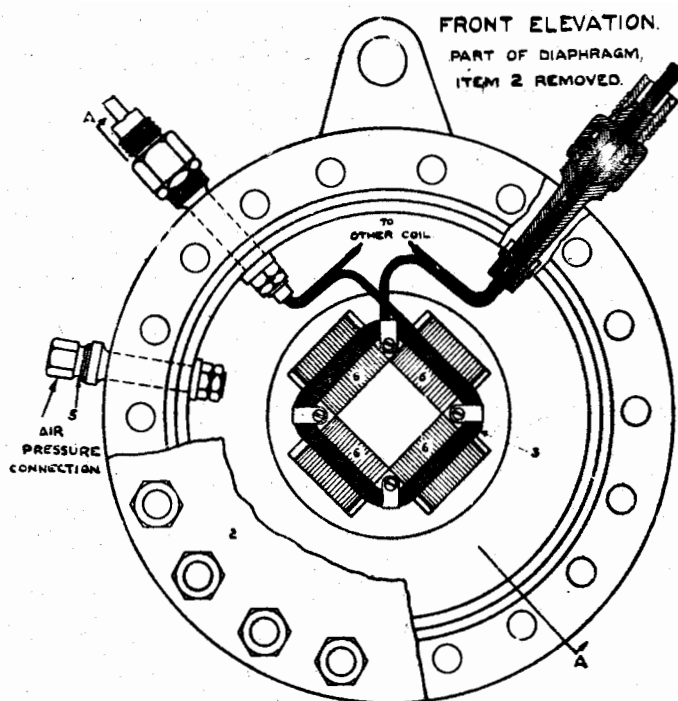


Fig. a

SECTION ON AA  
BOLTS, GLAND & AIR  
CONNECTION OMITTED.

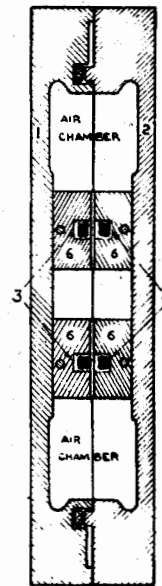


Fig. b.

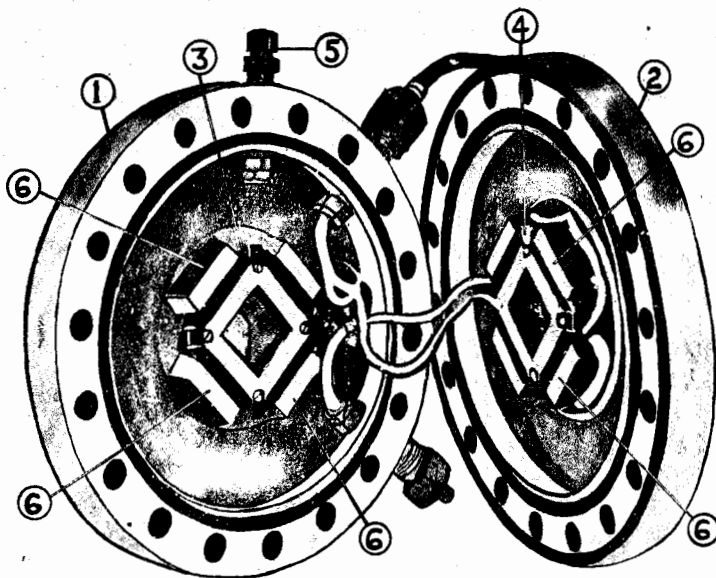


FIG C

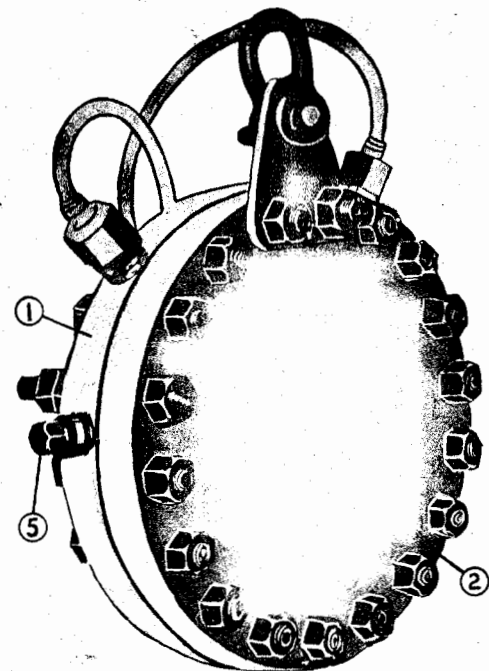


Fig. d.