Sept. 27, 1927. 1,643,782

S. LOEWE

DEVICE FOR ALTERING THE WAVE LENGTH

Filed Sept. 2, 1921

Fig. 1.

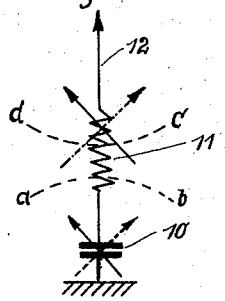


Fig. 2.

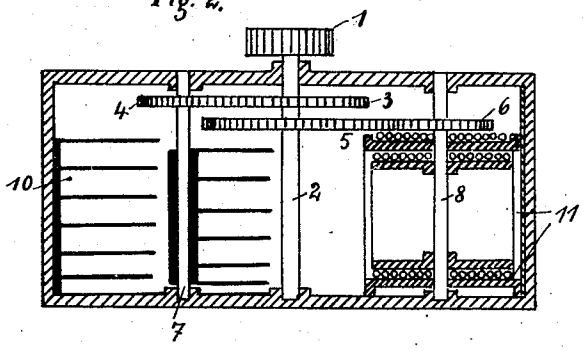
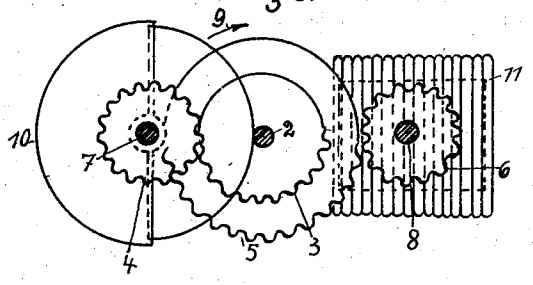


Fig. 3.



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DEVICE FOR ALTERING THE WAVE LENGTH.

Application filed September 2, 1921, Serial No. 498,167, and in Germany January 15, 1916.

(GRANTED UNDER THE PROVISIONS OF THE ACT OF MARCH 3, 1921, 41 STAT. L., 1313.)

This invention refers to the problem of altering continuously within wide limits the wave length of wireless system oscillations. The present invention differentiates itself from the devices heretofore in use by a special utilization of arrangements already known. The invention consists in the mechanical connection of a condenser and of a variometer in such a manner that the wave length range is caused to be run through firstly by the condenser being brought from its minimum to its maximum and then by the variometer which is set at its minimum being brought into play, the variometer being brought from its minimum up to its maximum while the condenser finds itself in its maximum position.

In this manner there is avoided any changing over or any switching off of the antenna circuit. There is further obtained thereby an interdependence of the movement of the variometer and the movement of the condenser, offering the advantage that the variation of the wave length is not brought about as in the arrangements at present in use by the simultaneous or alternating variation of two quantities, namely, capacities and self-induction, but rather by the variation of a single quantity, namely, of the condenser or of the variometer, because in this invention one of the two quantities runs through its entire range before a variation is started in the other. Furthermore, the fact of the condenser being the first to be brought up to its maximum constitutes an advantage because it is well known that smaller wave condensers are unsatisfactory from the electrical point of view. For these reasons it is advisable to cause the continuous run over the entire range of wave length, in a series combination or connection of condenser and variometer, to be effected through a suitable coupling of these two devices in such a manner that first of all the condenser and then the variometer or inversely is brought from one end position to the other.

The drawing shows in Fig. 1 diagrammatically the arrangement, according to this invention, while Figs. 2 and 3 show a practical execution of same.

According to Fig. 1 there is inserted in series in the antenna circuit 12 a condenser 10, which can be displaced from its minimum to its maximum along segment *a*, *b*, and a self-induction 11 which varies along segment *c*, *d*. This series combination or connection is adjusted in such a manner that upon the condenser reaching its end position *b* the turning of the variometer along segment *c*, *d* begins, both systems in their end positions being arranged as shown by the dotted arrow.

As shown by Figs. 2 and 3 the movement of both tuning members may be brought into such mechanical interdependency that one can, by means of a single knob, without noticing the details of the process, turn, in the first instance only the condenser, while by further turning of the knob the variometer is carried along and brought to its maximum position, an inverse process taking place upon the turning back of the knob. As shown in Figs. 2 and 3 this can be effected by causing spindle 2 actuated by knob 1 to act by means of a special transmission gearing 3, 4 and 5, 6, respectively upon condenser spindle 7, or respectively variometer spindle 8. Gears 3 and 5 resting on spindle 2 are provided with teeth only on one-half of their circumference, so that by a suitable mutual arrangement of gears 4 and 6 there is obtained in the first instance, namely by the first half rotation of spindle 2 in the direction of arrow 9, the rotation of the condenser spindle 7, whereupon during the second half rotation of spindle 2, the variometer spindle 8 is rotated by means of the gearing 5, 6. In this manner if a suitable selection is made of the transmission ratio, it will be possible by means of a single knob to bring first the condenser and then the variometer from its minimum to its maximum, while upon rotation being effected in reverse direction, the inverse process takes place. The condenser and the variometer may in the arrangement shown in Figs. 2 and 3, be laid out in any desired manner, as shown for instance by condenser and variometer systems 10 and 11.

I claim—

1. The combination with a plurality of variable tuning devices each operable to vary its tuning of a mechanism common to said devices, said mechanism being operable to operate said devices successively only whereby the tuning of said devices is changed successively only.

2. In combination with a plurality of

variable tuning devices, a control handle and means associated with said control handle, and operatively engaging each of said tuning devices in succession upon progressive movement of said handle, whereby a continuous variation in tuning is secured.

3. In combination with a pair of tuning devices, a control handle, and means associated with said control handle, and operatively engaging said tuning devices alternately upon progressive movement of said handle for controlling said devices by said handle.

4. In a tunable circuit, a pair of adjustable reactors of opposite character, means for actuating said reactors to adjust first one and then the other and provisions whereby said means will not actuate either reactor during the actuation of the other reactor.

5. In a tunable circuit, a pair of adjustable reactors of opposite character and means for actuating said reactors to adjust first one and then the other, said means inherently becoming disassociated with one of said reactors when said reactor reaches the limit of its adjustment.

6. In a tunable circuit, a pair of adjustable reactors of opposite character and means for actuating said reactors to adjust first one and then the other, said means being operatively associated with each other of said reactors throughout the adjustment thereof, and inherently becoming disassociated with each reactor respectively when said reactor reaches the limit of its adjustment.

In testimony whereof I affix my signature.

DR. SIEGMUND LOEWE.