June 4, 1940. J. GOLDMANN 2,203,329

TUNING ARRANGEMENT FOR HIGH FREQUENCY APPARATUS

Filed June 11, 1937

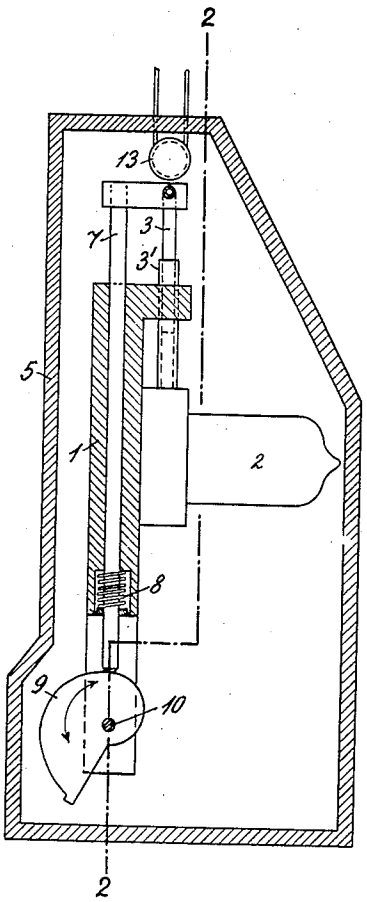


Fig.1

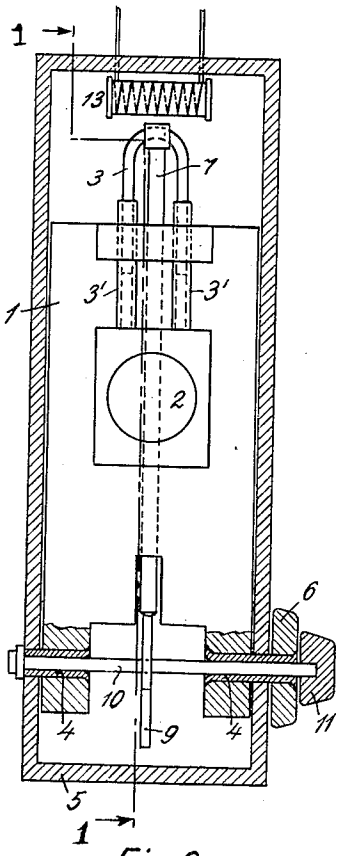


Fig.2

Inventor:
Joachim Goldmann
by R. C. Hapgood
Attorney

Patented June 4, 1940 2,203,329

UNITED STATES PATENT OFFICE

2,203,329

TUNING ARRANGEMENT FOR HIGH FREQUENCY APPARATUS

Joachim Goldmann, Berlin-Wilmersdorf, Germany, assignor to C. Lorenz Aktiengesellschaft, Berlin-Tempelhof, Germany, a company

Application June 11, 1937, Serial No. 147,693
In Germany June 16, 1936

4 Claims. (Cl. 250—20)

The switching means employed in transmitters or receivers for ultra-short waves are of a comparatively small size. For instance, the inductance of the oscillatory circuits is a short metal bow in many cases. To fulfill the requirement that both the frequency of the arrangement and the coupling thereof with an antenna structure, for example, should be variable often meets with difficulties if extremely high frequencies are concerned. In most cases the variation of the coupling degree is accomplished by displacing the coupling members in relation to each other. The frequency variation, however, if the capacity of the oscillation circuit is given by the tube capacity must be effected by varying the inductance of the oscillatory circuit. It is well known to make this inductance in the form of a bow arranged to slide in two metal tubes after the manner of a trombone slide.

By the invention a tuning arrangement is provided in which both the variation of the coupling degree and a continuous frequency variation are easy to obtain even if extremely short waves are concerned. The variation of the coupling degree is effected by a rotary movement imparted to the transmitting or receiving system as a whole, whereas the variation of the frequency is accomplished with the aid of a trombone slide adjustable by means of a tuning knob.

One embodiment of the invention is described hereafter, reference being had to the accompanying drawing in which

Fig. 1 is a sectional elevation of the arrangement chosen as an example, Fig. 2 shows a section through this arrangement on line 2—2 of Fig. 1.

On a base plate 1 an electron tube 2 and a bow-shaped slide 3 are disposed. Slide 3 is displaceable in tubular metal guides 3' and constitutes the inductance of the oscillatory circuit. The circuit arrangement is not of interest here and therefore is not shown. Slide 3 forms part of a coupling device whose other part is a coupling member 13 fixed within a casing 5. Plate 1 is rigid with two hollow axles 4 alining with one another and mounted in walls which in the case represented are those of the casing 5 that serves as a screening. One of the axles 4 has a tuning knob 6 fastened thereon. It will be seen that by turning knob 6 plate 1 is swung by its axles 4 serving as trunnions, and that in this way the mutual position of the coupling members 3, 13 and thus the coupling degree may be varied at will. The frequency is varied by varying the position of the slide 3 in relation to the guides 3'. This is done by means of a push rod 7 attached to the slide 3 and slideable in a bore of the plate 1. Rod 7 is by a helical spring 8 pressed against a cam disc 9 fastened on a shaft 10 which is mounted in the axles 4. On the shaft 10 and at the end thereof adjacent to knob 6 a tuning knob 11 is fixed. It will be seen that by turning the knob 11 the rod 7 is displaced in the desired direction so as to vary the length of the arrangement 3', 3.

Since the coupling degree is varied by turning the entire transmitting or receiving system, all those parts which serve to vary the frequency are not affected in their mutual relation so that a variation of the coupling degree does not entail a variation of the frequency.

What is claimed is:

1. In a tuning arrangement for ultra short wave transmitters and receivers, a fixedly mounted coupling member, a base plate, means for rotatably supporting said base plate, an electron tube and a coupling member connected therewith mounted on said base plate and movable therewith, and means including a control knob for rotating said base plate whereby the amount of coupling between the two coupling members may be varied by rotating the base plate.

2. The arrangement defined in claim 1, a screen surrounding said coupling members and electron tube, a hollow axle carrying said base plate and mounted for rotation within said screen and projecting therethrough, said control knob being mounted on said hollow axle outside of said screen, a shaft projecting through said axle to the outside of said screen, a tuning knob mounted on said shaft outside of said screen, a cam mounted on said shaft within said screening, and a push rod for actuating the coupling member mounted on the base plate, said push rod being actuated by said cam.

3. The arrangement according to claim 1 wherein the coupling member second mentioned consists of a bow-shaped slide, a rod having one end attached to said slide is slidably positioned in a support member, a cam is rotatably positioned so as to bear against the other end of said rod and means is provided for rotating said cam.

4. In a tuning arrangement for ultra short wave transmitters and receivers a fixedly mounted coupling member, a base plate, a hollow axle rotatably supporting said base plate, a control knob for rotating said axle, an electron tube fixed to said base plate, a coupling member connected to said electron tube, means for slidably mounting said coupling member on said base plate said coupling member being in the form of a bow-shaped slide, a rod having one end attached to said slide, means for slidably positioning said rod on said base plate, a cam bearing against the free end of said rod, a shaft mounted within said hollow axle and carrying said cam and a second control knob for rotating said shaft.

JOACHIM GOLDMANN.