Jan. 8, 1929. 1,697,967

M. B. WROBLEY

TUNING DEVICE FOR RADIO CIRCUITS

Filed May 21, 1925 2 Sheets-Sheet 1

Fig. 1

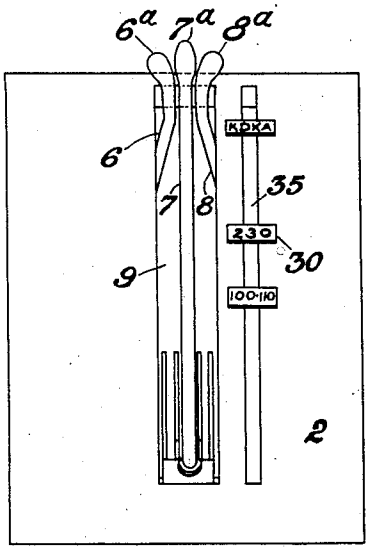


Fig. 2

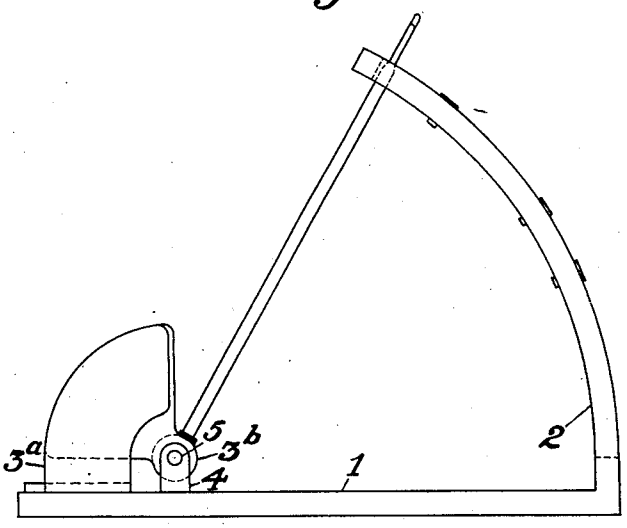
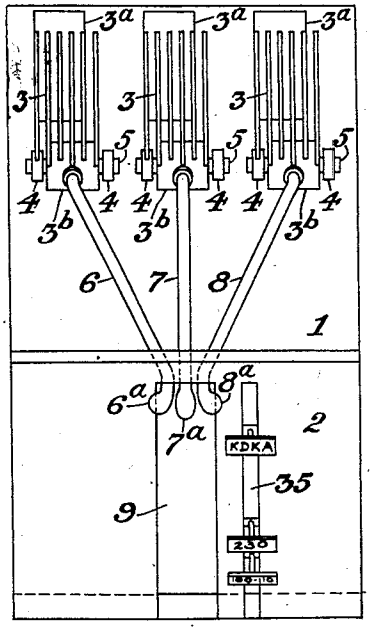


Fig. 3



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Fig. 4

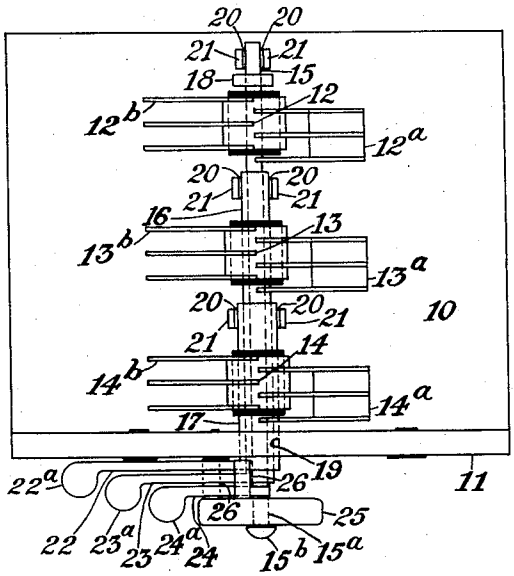


Fig. 6

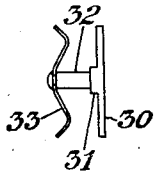
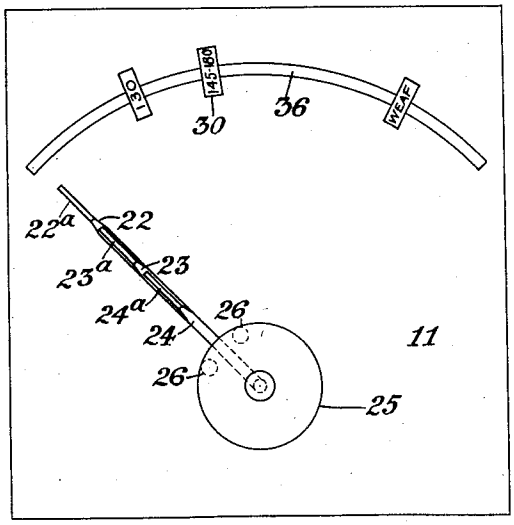


Fig. 5



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UNITED STATES PATENT OFFICE.

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TUNING DEVICE FOR RADIOCIRCUITS.

Application filed May 21, 1925. Serial No. 31,950.

It is the object of this invention to produce a device which will facilitate the tuning of radio circuits which have several condensers, reactances or inductances that require substantially the same adjustments and has reference more specifically to an improved construction and combination of elements by means of which several variable tuning units may be simultaneously moved to the same extent so as to obtain a rough tuning and which permits the several units to be moved independently of each other to obtain the fine adjustments.

My invention, briefly described, consists in attaching to each tuning unit a separate handle by means of which it can be adjusted, and to bring portions of said handles into juxtaposition with each other so that they may all be engaged by a movable pin for the purpose of adjusting all at one time but which can also be engaged separately for accomplishing the finer adjustments. In order to employ my invention to the best advantage it is desirable to provide a plurality of movable name plates along the path of the adjusting handles so that the exact positions of the handles for the several wavelengths may be logged.

In order more clearly to describe my invention and the manner of using the same, I shall have reference to the accompanying drawings in which it has been illustrated and in which:

Fig. 1 is a front view, in elevation, of one embodiment of my invention:

Fig. 2 is an end elevation of the parts shown in Fig. 1;

Fig. 3 is a top plan view of the parts shown in Figures 1 and 2;

Fig. 4 is a top plan view of a modified form of my invention;

Fig. 5 is a front elevation of the device shown in Fig. 5, and;

Fig. 6 is a plan view of one of the adjustable name plates.

In Figures 2 and 3 the part indicated by reference numeral 1 is the base of the radio cabinet and that indicated by numeral 2 the front side thereof. As my invention relates to a portion only of the radio receiver, I have purposely refrained from complicating the disclosure by the inclusion of parts that do not cooperate with it. Referring now more particularly to Figs. 2 and 3 I have shown three multiple plate condensers 3 arranged in a line. The stators which have been designated by the reference character 3^a are secured to the base 1 by any suitable means such, for example, as screws. I have illustrated multiple plate condensers but these may be replaced by variometers or any variable tuning devices may be employed and adjusted in the same manner. Each condenser has a rotor 3^b which is nonrotatably secured to a shaft 5 that in turn is rotatably mounted in the brackets 4. The stands or brackets 4 are arranged so that the several short shafts 5 are coaxial or concentric with respect to each other. Secured to but electrically insulated from each of the rotors is a lever; these levers have been designated by numerals 6, 7 and 8. The side 2 of the cabinet is a segmental cylindrical member whose center of curvature coincides with the center of the shaft 6 and has a slot 9 through which the outer ends of the levers 6, 7 and 8 project. The extreme ends of the levers are flattened so as to produce handle portions 6^a, 7^a and 8^a that are adapted to be grasped by the hand of the operator when tuning the circuits. As it is my desire to move all of the levers simultaneously, it is essential that the handles shall be located as close together as possible. This may be accomplished in several ways but I have shown lever 7 as extending in a direction parallel with its plane of rotation while levers 6 and 7 are bent towards it so as to bring the handles close together. The same result could, of course, be obtained by having one of the levers 6 or 8 straight and the others bent. Extending parallel with the slot 9 is a narrow slot 35 which is adapted to receive the name plates 30 that carry on their faces either members that show the wave length to which that particular location corresponds or letters indicating the station to which the particular location of the levers corresponds. The construction of these name plates is shown in Fig. 6. The plates 30 have a transversely extending portion of greater thickness than the ends so as to provide two parallel shoulders 31 that are spaced apart a distance that equals the width of the slot 35. A stud 32 projects from the rear of the thickened part of the plate and has secured to it a spring 33 that is bowed in the manner shown in Fig. 6. The width of this spring is less than the width of the slot so that it may be inserted from the front and when the plate is in place the ends of the spring rest upon the inner surface of the side 2 and holds the plate which may, however, be moved by applying sufficient force.

When the operator desires to adjust the circuits he grasps all three handles and moves them into a position adjacent the name plate that represents the station he wants to tune in on. By this simultaneous adjustment the circuits are roughly tuned. He now completes the tuning by moving each lever independently until the best results are attained. It is, of course, possible to move each lever separately to any extent desired, but since they must all be moved to substantially the same position, the method described is the quickest and best.

In Figs. 4 and 5, I have shown a modification which also contains means to still further simplify the operation of the radio set. In Figs. 4 and 5 numeral 10 represents the base and 11 the front end of the cabinet. Secured to the base 10 are three stators 12^a, 13^a and 14^a of condensers 12, 13 and 14. The rotors 12^b, 13^b and 14^b are each secured respectively to and insulated from the concentric shafts 15, 16 and 17. The largest shaft, which has been designated by numeral 17, has one end journalled in the bore 19 of the side 11 and is rotatably carried by shaft 16 which in turn is rotatably carried on the smallest shaft 15 whose inner end is supported in the stand or bracket 18. Since it is necessary to be able to rotate each shaft independently of the other two, I have provided each shaft with a friction device comprising springs 20 which have parts 21 that are fastened to the base 10. These springs are adjusted so that the friction produced by them is sufficient to hold the shaft from rotation when either of the other shafts are rotated, thereby making it possible to make individual adjustments.

Secured to the outer ends of the shafts 15, 16 and 17 are arms or levers 24, 23 and 22 respectively. The outer ends of these arms have flattened handle portions 24^a, 23^a and 22^a respectively. Shaft 15 is provided with an extension 15^a which forms a pivot for the disk 25 that is held against withdrawal by means of the head 15^b. The disk 25 has two spaced pins 26 extending inwardly therefrom; these pins embrace the levers in the manner shown in Fig. 5 and are spaced apart a somewhat greater distance than the thickness of the levers so that the latter may be independently adjusted to a limited extent. By rotating the plate 25 in either direction one or the other of the pins 26 will engage the levers and move them all together into position adjacent the desired name plate 30; this gives the initial rough adjustment. Each lever is now independently adjusted so as to get the best result.

The plates 30 shown in Fig. 5 are constructed as above described and are movable in the slot 26. The ends of the levers or handles, in both embodiments, also serve as pointers or indicators but other indicators may be used if desired.

After the plates 30 have once been adjusted for a special wave length, the circuits may be quickly tuned to this wave length by moving the handles until they point to this particular plate.

Although I have described a specific embodiment of my invention, this has been done for the purpose of illustration only and this disclosure should therefore not be considered as limiting the invention to any greater extent than what may be necessary for the purpose of avoiding the prior art.

Having now described my invention what I claim as new is:

1. A radio tuning device comprising, in combination, a plurality of variable tuning units adapted to be connected into the circuits of a radio reception apparatus for varying the electrical characteristics of the circuits, each of said units having a stationary part and a movable part, said movable parts being adapted to oscillate about axes that are in substantial alignment, an adjusting member secured to each of said movable parts, said members each having a portion that lies parallel with the corresponding portion of the adjacent member, said portions being adapted to move in substantially parallel paths and means for adjusting said movable members simultaneously, said means having spaced lugs adapted to engage all of said movable members.

2. A radio tuning device comprising, in combination, a plurality of variable tuning units adapted to be connected into the circuits of a radio reception apparatus for varying the electrical characteristics of the circuits, each of said units having a stationary part and a movable part, said movable parts being adapted to oscillate about axes that are in substantial alignment, an adjusting member secured to each of said movable parts, said members each having a portion that lies parallel with the corresponding portion of the adjacent member, said portions being adapted to move in substantially parallel paths, means movable about the axis of the movable parts for adjusting said movable members simultaneously, said means having spaced lugs adapted to engage all of said movable members and a plurality of name plates adjustably located in a path parallel with the path of movement of said adjusting members.

In testimony whereof I affix my signature.

MATTHEW B. WROBLEY.