March 23 , 1926. 1,577,714

A. C. HAYDEN

RADIO TUNING DEVICE

Filed April 27, 1925 2 Sheets-Sheet 1

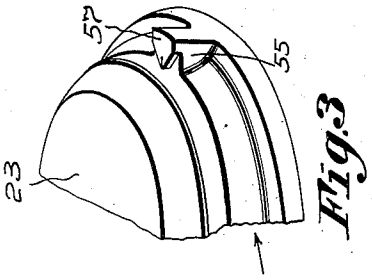


Fig.3

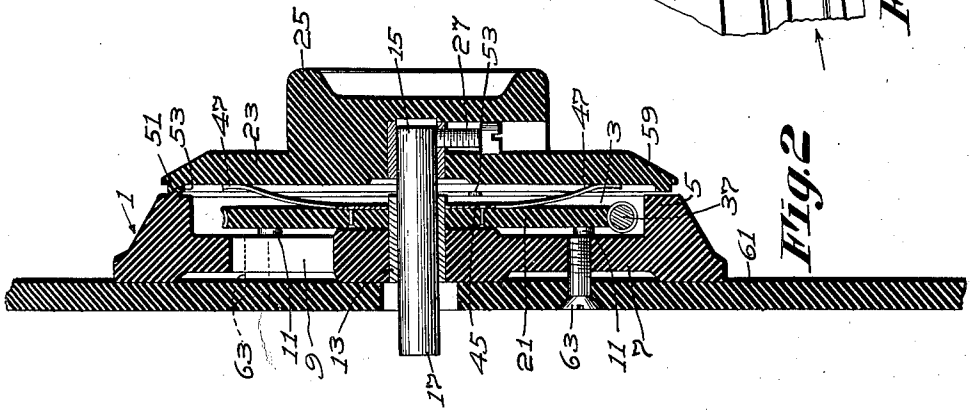


Fig.2

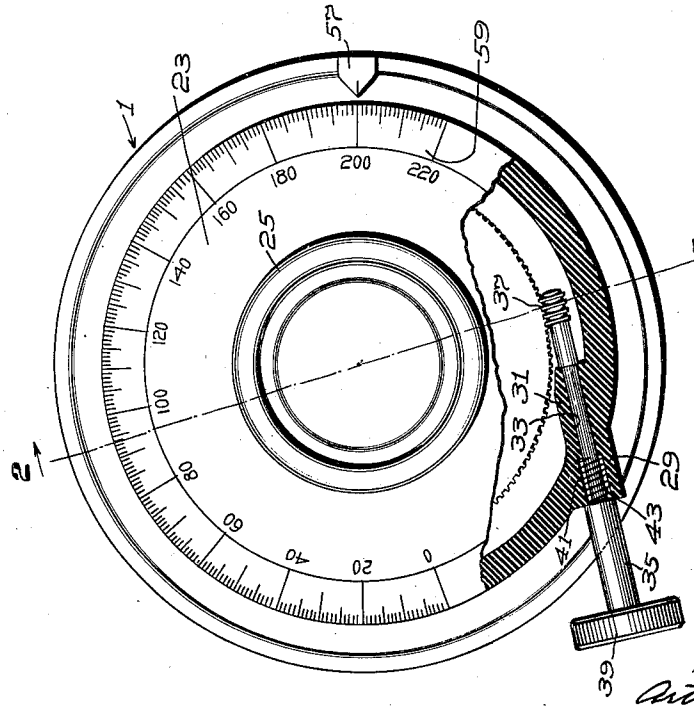


Fig.1

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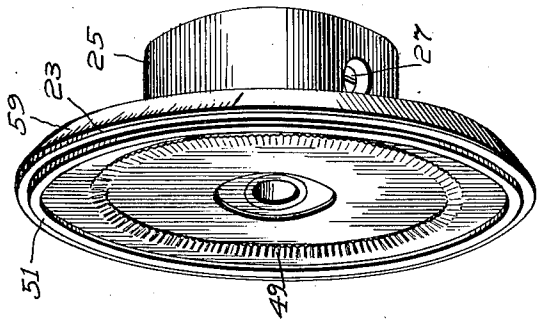


Fig. 6

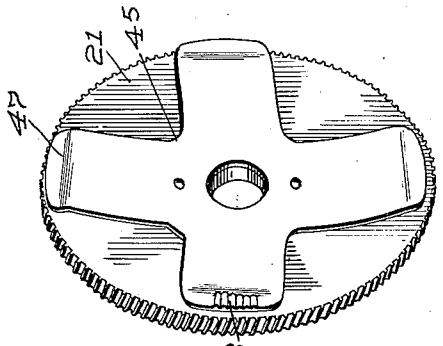


Fig. 5

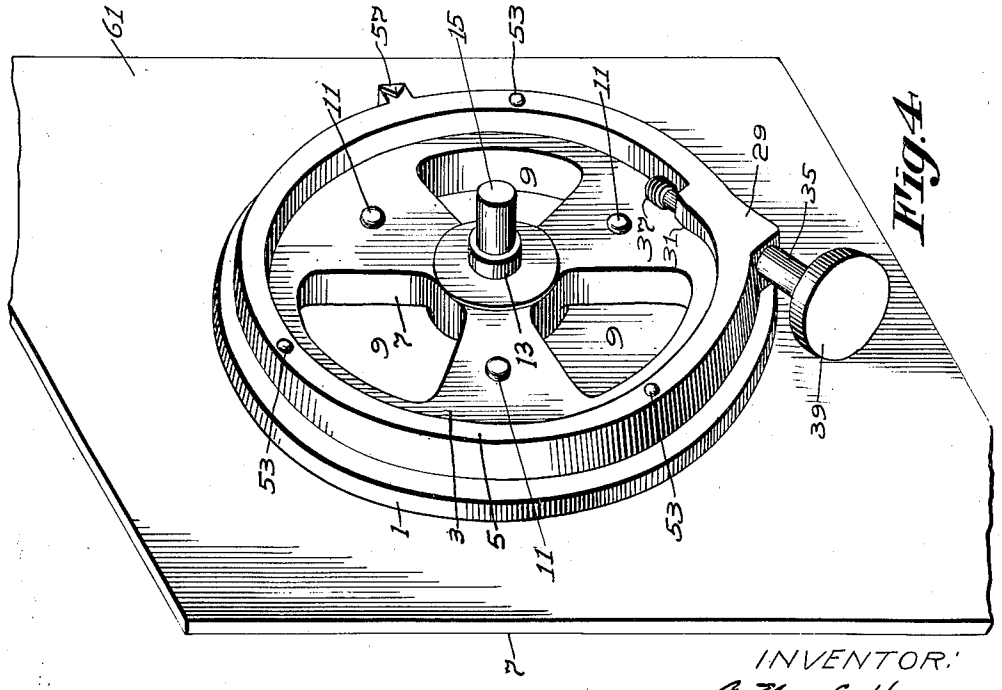


Fig. 4

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Patented Mar. 23, 1926. 1,577,714

UNITED STATES PATENT OFFICE.

ARTHUR C. HAYDEN, OF BROCKTON, MASSACHUSETTS.

RADIO TUNING DEVICE.

Application filed April 27, 1925. Serial No. 26,022.

To all whom it may concern:

Be it known that I, ARTHUR C. HAYDEN, a citizen of the United States, residing at Brockton, in the county of Plymouth and State of Massachusetts, have invented certain new and useful Improvements in Radio Tuning Devices, of which the following is a specification.

The invention to be hereinafter described relates to radio tuning devices, and among other objects provides a simple and efficient device whereby preliminary and final fine tuning adjustments may be obtained.

The character of the invention may be best understood by reference to the following description of one good form thereof shown in the accompanying drawings, wherein:

Fig. 1 is a plan of a radio tuning device embodying the invention, a portion thereof being broken away and a portion being shown in section;

Fig. 2 is a section taken on line 2—2 of Fig. 1;

Fig. 3 is a perspective view of a detail to be referred to;

Fig. 4 is a perspective view of a portion of a panel having the base of the tuning device mounted thereon;

Fig. 5 is a perspective view of the worm gear and spring; and

Fig. 6 is a perspective view looking toward the under face of the dial.

Referring to the drawings, the radio tuning device shown therein as one good form of the invention, comprises a base 1 which may be formed of bakelite or other suitable material. This base has a recess 3 surrounded by the rim 5 which projects up from a web 7 at the bottom of the recess. This web has apertures 9 therein to reduce the weight of the base, and between the apertures and projecting from the web are nubs or elements 11.

Secured to the web and projecting upward into the recess is a sleeve 13 through which projects the shaft 15 having an end 17 adapted for connection with a radio tuning instrumentality. Journalled on the sleeve 13 and resting against the nubs 11 is a worm gear 21 mounted in the recess.

Above and in the present instance covering the recess is a dial disk 23 having a handle 25 fast on and projecting outward therefrom. The handle is secured to the adjusting shaft 15 by a screw 27.

The rim 5 is molded or formed to provide a shoulder 29 projecting out from the rim and a shoulder 31 projecting in from the rim, and a bore 33 extends through the shoulders and the rim and forms a bearing for receiving a shaft 35. At the inner end of the shaft is a worm 37 meshing with the worm gear 21 referred to, and fast on the outer end of the shaft is a handle 39. In the shoulder 29 is a counterbore 41 receiving a coil spring 43 confined against the inner end of the counterbore and the handle 39, the construction being such that the worm shaft is urged by the spring outwardly to hold an enlargement on the worm shaft against the end of the shoulder 31, thereby to prevent any lost motion of the worm shaft in the direction of the axis thereof.

Suitable means may be provided frictionally to impart rotative adjustment from the worm gear to the dial disk, and in the present instance, this means comprises a star-shaped spring 45 which is riveted or otherwise secured to the worm gear and has leaves 47 which press against the under face of the dial disk. To increase the friction between the disk and spring, the upper surface of one of the leaf springs may have a finely toothed portion 48, and the under face of the disk may have a similarly toothed crown 49 for engagement with the toothed portion of the spring leaf.

The dial disk overlaps the upper edge of the rim and has a flange 51 for engagement with nubs 53 projecting slightly upward from the rim to reduce friction on the disk. The rim 5 may be molded or formed to present a stud 55 having an index 57 in line with the graduated scale on the beveled edge 59 of the dial disk. The base may be mounted on the front plate 61 of a radio tuning set, and may be secured thereto by screws 63 entered through the plate into the base.

In the use of the device for preliminary or coarse tuning adjustment, the handle 25 may be rotatively adjusted and directly rotate the adjusting shaft 15. In the course of this adjustment the dial disk will slide along the leaves of the spring 45 which is prevented from rotation by the interlocking engagement of the worm gear with the worm. The teeth 48 on the spring leaves 47, and the teeth 49 on the under face of the dial are rounded and so fine that they do not interfere with ready direct rotative ad-

justment of the dial and the shaft 15. In some instances it may be found that sufficient friction between the spring leaves and the under face of the dial is obtained without employing the teeth 48 and 49.

For final fine tuning adjustment, the handle 39 is turned and operates through the worm shaft, worm gear, spring and dial disk to rotatively adjust the shaft 15.

As stated, the end 17 of the shaft 15 is adapted for connection with the radio tuning instrumentality, and when the shaft is so connected, it will be prevented from moving axially toward the right (Fig. 2).

The base and the dial may be easily molded of bakelite and given the required form. The device is simple in construction, has few parts which may be quickly and easily assembled, and it may be readily applied to any radio set. The operating parts with the exception of the handles or knobs 25 and 39 are enclosed and protected, and the exterior of the device has a desirable appearance.

It will be understood that the invention is not limited to the specific embodiment shown, and that various deviations may be made therefrom without departing from the spirit and scope of the appended claims.

What is claimed is:

1. A radio tuning device comprising a base having a recess therein and a rim surrounding the recess, a sleeve mounted in said base and projecting up into the said recess, a worm gear journalled on said sleeve, said rim having a bearing therein, a shaft journalled in said bearing having a worm meshing with said worm gear, a dial disk above said gear, a shaft projecting through the sleeve and base and adapted for connection with a radio adjusting instrumentality, means to secure the dial to the last named shaft, and spring means interposed between the worm gear and the dial and secured to one and pressing frictionally against the other.

2. A radio tuning device comprising a base having a recess therein and a rim surrounding the recess, a sleeve secured to the base and projecting up into said recess, a worm gear journalled on said sleeve, a bearing formed in said rim and extending from the outer to the inner face of said rim, a worm shaft journalled in said bearing and having a worm meshing with the worm gear, a dial disk over the worm gear and recess and spaced from the worm gear, a leaf spring interposed between the worm gear and dial disk and secured to one and in frictional engagement with the other, an adjusting shaft projecting through the sleeve and adapted for connection with a radio adjusting instrumentality, means for securing said shaft to the dial disk, and handles on the adjusting shaft and the worm shaft, the one for preliminary adjustment of the adjusting shaft and the other for final adjustment of said shaft.

3. A radio tuning device comprising a bakelite base having a recess and a rim surrounding the recess, a dial disk above and covering the recess, an adjusting shaft projecting through the base and adapted for connection with a radio tuning instrumentality, a bearing in the rim, a shaft in said bearing having a worm thereon, a worm gear meshing with the worm and having a central hole therein through which the adjusting shaft projects, and means whereby the worm gear may rotate the adjusting shaft, or the adjusting shaft may be rotated directly.

4. A radio tuning device comprising a base having a recess therein and a rim surrounding the recess, a worm and worm gear mounted in the recess, an adjusting shaft projecting through the worm gear, a handle fast on said shaft for rotatively adjusting the same, a shaft for the worm, a handle for the worm shaft, and frictional means whereby the worm gear may impart rotative adjustment to the adjusting shaft.

5. A radio tuning device comprising a base having a recess therein and a rim surrounding the recess, elements projecting up from the bottom of the recess, a worm gear in the recess resting against said elements, a bearing in the rim, a worm shaft in the bearing having a worm meshing with the worm gear, a dial disk over the recess, an adjusting shaft projecting through the worm gear and the bottom of the base and adapted for connection with the radio tuning instrumentality, spring means interposed between the worm gear and disk and secured to one and frictionally engaging the other, and means to secure the disk to the adjusting shaft.

6. A radio tuning device comprising a base having a recess therein, a worm and worm gear mounted in the recess, a dial over the recess having a handle thereon, a shaft secured to the dial and projecting through the worm gear, a shaft for the worm, a handle for the worm shaft, and a spring for imparting rotative adjustment from the worm gear to the dial, said spring and dial having interengaging teeth for increasing the frictional engagement between them.

ARTHUR C. HAYDEN.