PORTABLE RADIO RECEIVER


Application February 11, 1943, Serial No. 475,530.

This invention relates to portable radio receivers, and has special reference to the construction and arrangement of the control elements and tuning indication means for such receivers. Heretofore, portable receivers have either had the controls and dials mounted externally of one side wall of the receiver casing, or a hinged door or some sliding closure means has been provided. Both such constructions have proven objectionable in certain respects. For example, the unprotected exterior mounting has been unsightly, and has had the disadvantage that the projecting controls might be struck and damaged; while the use of doors has proven unhandy and costly. Moreover, with all prior constructions it has been very inconvenient, if not impossible, to adjust the receiver while carrying the same, as the dial scale has not been visible and, at best, control was a two-handed operation. It is, therefore, the primary object of the present invention to overcome the aforesaid disadvantages by the provision of a portable receiver in which the control and indication elements are mounted in a safe and attractive location, and are adapted for ready use while the set is being carried. More particularly, the invention has as an object the provision of a receiver having a carrying handle, in which handle the control and indication elements are attractively and conveniently mounted. A further object of the invention resides in the provision of a comfortably configured handle of curved contour, mounted upon the surface of the casing, and having tuning indication means extending along its curved upper surface, and manual control elements retracted in the handle structure within easy reach of the fingers. It is also an object of the invention to provide a handle of the above type which is suitably constructed to accommodate and conceal both the control drive elements leading to the receiver, and the actuating means for the tuning indicator. Still another object of the invention resides in the provision of such a carrying handle in which the tuning scale is readable from a distance and the scale cover is configured to continue the contours of said handle. It is also an object of the invention to provide a handle of the above character which is constructed of cooperating sections within which the necessary mounting and guide mechanisms may be readily formed and provided. A still further object of the invention resides in the provision of a radio carrying handle having a flexible indicator-driving element concealed therein and suitable guide and mounting means therefor. The manner in which the above objects and advantages are realized, together with others incident to the invention, will be clear from a consideration of the following description, taken with the accompanying drawings, in which:

Figure 1 is a perspective view of a portable radio receiver embodying the invention;

Figure 2 is a rear elevational view of the receiver with one cabinet panel removed, and with a portion of the chassis broken away for the sake of better illustration;

Figure 3 is a perspective view illustrating in greater detail certain portions of the mechanism shown in Figure 2;

Figure 4 is an approximately full scale perspective view of the two cooperating handle sections, and illustrates the manner in which the tuning indicator drive element is mounted therein; and

Figure 5 is a perspective view of a portion of the handle, after assembly of the two sections.

Briefly, as will be evident from the above figures, the invention provides a radio receiver having a novel carrying handle structure within which is arranged the tuning indicator drive element; the construction and arrangement being such that the indicator itself is constrained to follow a path in readily viewable position closely adjacent to the curved upper surface of said handle. Suitable radio controls extend above the receiver and are for the most part recessed into and are partially concealed by the handle. In the embodiment illustrated, these controls are located closely adjacent to the cabinet and beneath either end portion of the handle structure and, as brought out hereinafter, they preferably comprise adjustment means for the conventional tuning condenser and volume control. Referring more particularly to Figures 1 and 2 of the drawings, there is illustrated a radio cabinet having a carrying handle generally indicated at 2. This cabinet preferably has a removable wall panel 3 for ready access thereto, the panel normally being retained by suitable fasteners 4—4, seen in Figure 2. Located behind a grille 5 is the conventional speaker 6; the receiver being equipped with suitable tuning means 8 and volume control means 9 adapted for actuation by the upwardly extending short shafts 10 and 11, respectively.
As the invention does not reside in the radio elements, per se, the receiver components have not been indicated in detail, and it is sufficient to point out that the usual on-off volume control is operatively associated with shaft 11 and carried by the chassis structure 12. Similarly, the tuning mechanism 8, preferably taking the form of a conventional variable condenser, may conveniently be mounted directly on the shaft 13, for that purpose. A cord 14 and operating drive wheel 15 serve to actuate the tuning mechanism 8, as will be more fully described hereinafter.

Turning now to the handle structure of the present invention and making particular reference to Figures 2, 4 and 5, it will be seen that this handle includes a primary section 16 which is adapted to be fixed to the radio cabinet as by means of bolts (not shown) passing through the cooperating bolt holes 17-17, formed in the base portion of said section. Adapted to cooperate with this primary section is a secondary or closure section 18 of similar peripheral contour, the sections preferably being made of some suitable plastic by a molding process; although it will be understood that any desired material or method of manufacture may be employed.

Reference is now to Figures 4 and 5 of the drawings, it will be seen that these molded sections comprise external rounded wall portions 19 and 19a which extend toward the longitudinal generally central portion of the handle, terminating therein in flat coplanar marginal portions 20 and 20a, cooperatively to form the lower curved surface of the assembled structure, as well as the rounded contour of either end of the handle. The upper surface of each section is recessed as at 21 and 21a, and these recessed portions have cooperating retaining walls 22 and 22a, so sloped as to firmly engage the transparent scale cover 23, which is provided with suitable indicia as at 24. The indicia may be applied directly to the cover, as shown, or may be positioned beneath it, for example, by application to the aforementioned recessed surface.

The inner longitudinal zone of each recessed portion terminates in a flat marginal edge, seen at 25 and 25a, respectively; said edges being coplanar with the portions 20 and 20a, respectively, and when the sections are interfitted, there is uninterrupted bearing contact between these edges about the periphery of the sections, as clearly appears in Figure 5.

Suitable strengthening and molding ribs 26 and 26a are also used, and these may have any desired spacing and disposition, although the ribs must terminate short of the curved edge portion 20, to accommodate the indicator driving element, as later described. Also, primary section 16 has formed therein a narrow elongated portion 27, recessed with respect to the main recessed portions 21 and 21a, to form (as appears to best advantage in Figure 5) a central track for the indicator driving element.

As shown at 28 and 28a, the two handle sections are further provided with internally threaded securing projections, the outer surfaces of which lie in the plane of the aforementioned coplanar marginal edges, and are in registry with one another when the halves are assembled. Screws 29, seen in Figures 1 and 2, are then utilized to maintain the sections in assembled relation.

To accommodate the control knobs 30 and 31, the handle sections have formed therein undercut portions indicated generally at 32 and 32a, which are spaced to register with the points of emergence of the shafts 10 and 11, while semi-circular cut-outs 33 and 33a cooperate to provide upper bearings for said shafts. As best seen in Figures 2 and 5, the control knobs are almost entirely reccessed into the handle structure, extending outwardly slightly, but great enough to afford easy manipulation thereof.

It will be evident that by a re-design of certain details, the knobs may be arranged to extend inwardly toward the finger opening beneath the handle, should such be desired. In either case, the knobs will lie within easy reach of the fingers, even when the set is being carried.

Considering now the indicator driving arrangement, handle section 16 has small dowel-like rods 34, 35 and 36, formed therein which are adapted to extend centrally into but contact with the corresponding flat portions 34a, 35a, and 36a, molded in relief into the handle section 18. As shown in the drawings, these rods are preferably provided with bearing sleeves 37. In general, in the preferred form, the indicator and tuning drive system comprises a continuous flexible element such as a cord 14, having upper and lower cord runs in the handle, shown at A and B, respectively, all adapted to be driven by rotation of shaft 10. An indicating pointer or button 38 is fixed to the cord in the upper run thereof, by any convenient means, and cord cooperation with the scale indicia 24 to indicate the frequency or other identification of the desired transmitting station. At its lower end, shaft 10 carries a driving pulley 39 about which the cord 14 is wrapped, from which point the cord extends laterally to an idler pulley 40, and thence upwardly and downwardly into association with the indicator and the condenser drive wheel 15, respectively.

It will be understood that any desired driving arrangement may be utilized, but for convenience, one particular arrangement is illustrated in Figures 2 and 3. Considering these figures with Figure 4, it will be seen that the upper cord portion A, carrying pointer 38, runs in recess 27, thereby causing the pointer to follow the curved handle in cooperation with the scale.

From recess 27 the cord runs around pin 35, through an aperture 41 in the handle structure and an aperture 42 in casing 1, and thence around idler pulley 40 and the driving portion of shaft 10 into engagement with the condenser drive wheel 15. From this wheel the cord returns upwardly past the idler pulley, through the apertures 41 and 42, over bearing rod 34 and thence along the curved lower inside surface of section 16 beneath the ribs 28. From this point, as clearly appears in Figure 4, the cord passes around rod 35 and thence returns again through the slot 27. The cord is tensioned by the spring 43, one end of which may be inserted in one of the adjusting holes 44, in accordance with common practice.

Rotation of knob 30 will, therefore, determine the setting of the tuning device 8, and will cause corresponding movement of the indicator 38. The arrangement is such that the complete motion of the tuning element between its extreme positions is just sufficient to cause traverse of the indicator 38 from one end of the dial to the other.

In the interest of further clarity, the method of assembling the device will be briefly described.
The control knobs 30 and 31 are first fitted over the upwardly extending ends of shafts 10 and 11, after which the primary handle section 18 is fixed, as by means of bolts passing through the apertures 17—17 into the casing 1. Following this, the cord is brought up from the tuning drive elements through aperture 42 and is placed around the bearing elements 34, 35 and 36, with the upper portion in slot 27, as shown in Fig. 4. Finally, after the indicator 38 has been properly positioned, the scale is inserted and cooperating handle section 18 is fixed to section 16 by means of the screws 39 and 40, correspondingly.

From the foregoing description, it will be evident that the invention provides an unusually attractive and convenient radio control and tuning indicator arrangement, which obviates the necessity for doors, projecting controls and the like. Moreover, although the desirable curved form of handle may be used, the structure is such that there is no sacrifice of smoothness and accuracy in the indicating mechanism. Further, the dial scale provided is so positioned as to be readable with unusual ease, and the location of the control elements is such that the receiver may be readily adjusted, either when stationary or in transit. In this connection, it is to be noted that the controls may be manipulated and the indicator dial observed, while carrying the receiver, without raising it from the normal carrying position. To this end, the user may manipulate the controls with the fingers of same hand which is being used to carry the receiver.

Since important features of the invention reside in the location and general arrangement of the elements, rather than in the structure of the elements per se, the indicating apparatus may take other forms and be differently operated, if desired. Moreover, the receiver elements controlled by the adjusting knobs may be varied from those illustrated herein, or additional controls may be added by the provision of split knobs and the like. In general, although a preferred embodiment has been illustrated, it will be understood that the invention is susceptible of modification without departing from the spirit and scope of the invention, as defined in the appended claims.

I claim:

1. A portable radio receiver including a casing and a carrying handle having a gripping portion, means in said casing for controlling the operation of said receiver including a resonance-varying device, a tuning scale and a cooperating movable indicator in the gripping portion of said handle, and means operatively interconnecting said resonance-varying device and said indicator, whereby variation of said device effects corresponding movement of said indicator with relation to said scale.

2. A portable radio receiver including a casing and a carrying handle having a gripping portion and end portions secured to said casing, means in said casing for controlling the operation of said receiver including a resonance-varying device, tuning indication means in the gripping portion of said handle, tuning actuation means at least partially recessed beneath an end portion of said handle and arranged within easy reach of the fingers adjacent the upper surface of said casing, and means operatively interconnecting said indication and actuation means with said resonance-varying device.

3. A portable radio receiver including a casing and a carrying handle projecting thereabove and having a curved surface, means in said casing for controlling the operation of said receiver including a resonance-varying device, a tuning scale on said handle arranged along the curved surface thereof, an indicator in said handle movable along said curved surface in cooperation with said scale, a manually actuable element recessed into said handle near one end of the handle structure, and driving means adapted to effect adjustment of said resonance-varying device and movement of said indicator along said curved surface in response to adjustment movements of said manually actuable element.

4. In a carrying handle for a radio receiver having a tuning element, a pair of opposed separable sections cooperating to form a hollow handle structure, said structure having a portion adapted to be gripped by the hand and a depending portion adapted to be fixed to a receiver, said handle further having a recess formed therein adjacent said depending portion and adapted to receive a control element, a tuning scale and associated indicating means in said first-named portion of the handle, and a flexible element substantially concealed in said handle structure and drivingly connected to said indicating means and said flexible element being adapted to be connected for actuation in correspondence with the receiver tuning element.

5. In a carrying handle for a radio receiver, a pair of opposed concave sections separable along a line extending substantially longitudinally of the handle and normally cooperating to form a hollow handle structure, a tuning scale adjacent the outer surface of said structure, a movable indicator cooperating with said scale, an elongated flexible driving element substantially concealed within said structure and associated with said indicator to effect movement of the same, and means in said handle guiding the movement of said indicator with respect to said scale.

6. In a carrying handle for a radio receiver, a pair of opposed concave sections separable along a line extending substantially longitudinally of the handle and normally cooperating to form a hollow handle structure, said sections having cooperating portions forming support and securing means both for the structure with relation to a receiver and for said sections with relation to one another, indicator means including a movable member within said structure, bearing portions on one of said sections, a flexible driving element for said member supported by said bearing portions, and means on the other of said sections cooperating with said bearing portions to retain said driving element in supported relation therewith.

7. A portable radio receiver, comprising a casing, a carrying handle having a gripping portion and end portions secured to said casing, tuning means in said casing, volume control means in said casing, tuning indicator means in the gripping portion of said handle, a manual tuning element recessed in one end portion of said handle, a manual volume control element recessed in the other end portion of said handle, means operatively interconnecting said tuning means and said manual tuning element with said tuning means, and means operatively interconnecting said manual volume control element with said volume control means.

8. A portable radio receiver, comprising a casing and a carrying handle having a gripping portion, means at opposite ends of the gripping portion for securing the handle to the casing, tuning
means for said receiver, tuning indicator means in the gripping portion of said handle, and means for actuating said indicator means in correspondence to the tuning of the receiver.

9. A portable radio receiver, comprising a casing, a carrying handle having its opposite ends secured to said casing and having an intermediate gripping portion spaced from the casing, tuning means for said receiver, tuning indicator means in the gripping portion of said handle, and means for actuating said indicator means in correspondence to the tuning of the receiver.

RICHARD J. WHIPPLE.