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RADIO CABINET

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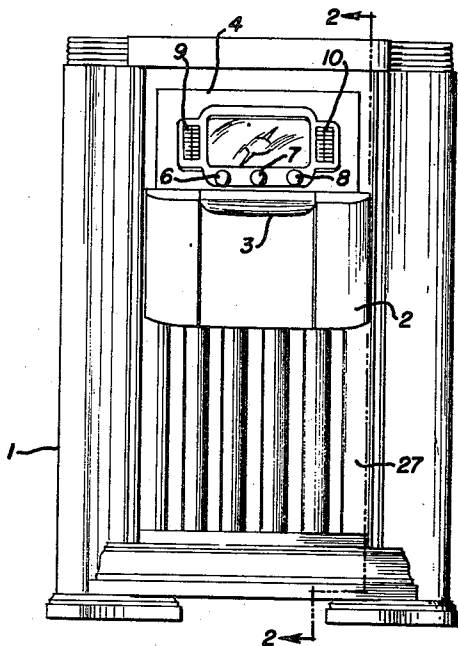


Fig. 1

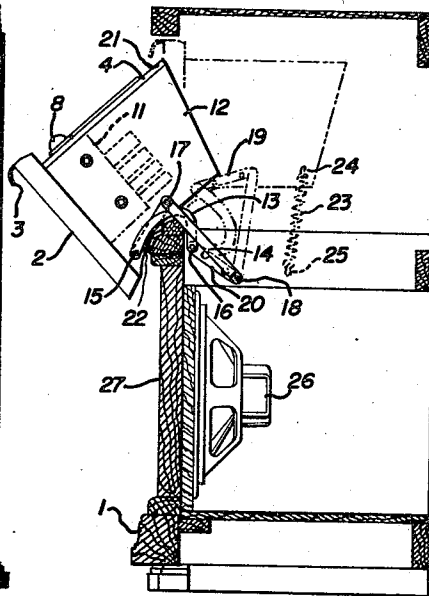


Fig. 2

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RADIO CABINET

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1 Claim. (Cl. 250—14)

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This invention relates to radio apparatus and more particularly to cabinet mountings for such apparatus adapted for use in the home.

The principal object of the invention is to provide a cabinet mounting for a home radio that will combine a maximum of convenience of operation of the radio with a maximum utility of the cabinet while at the same time presenting a pleasing appearance.

It has in the past been the usual practice to mount home type radios in cabinets completely enclosing the radio and to provide the cabinet with a hinged top so that access might be had to the radio controls when desired. Such an arrangement renders the top of the cabinet valueless as a table or shelf whenever the radio is in use. Also, regardless of the position of the top of the cabinet, the radio controls are inaccessible to anyone not in a standing position.

To avoid the objections to the hinged top radio cabinet, resort has been had to a number of other arrangements. In one arrangement the radio controls have been placed on the front side of the cabinet but in such location they can be operated only by a person either in a sitting position or bending over awkwardly from a standing position. In another arrangement it has been proposed to mount the radio in a sliding drawer with the controls on top so that when not in use the radio is completely hidden, but with such an arrangement when the drawer is pulled out the controls are accessible only from the top which is one of the objections to the hinged top radio cabinet.

It has also been proposed to mount the radio controls on a panel attached at right angles to a pivoted front panel so that the control panel can be moved to a position inclined at an angle to the floor such that the controls can be operated from either a sitting or standing position. This arrangement has several undesirable features, particularly the requirement that the whole front panel be pivotally mounted in order to bring the control panel to a suitable position. This arises from the necessity of moving the control panel a distance sufficient to remove it from the cabinet without at the same time bringing it too much into the vertical plane. Movement of the whole front panel of the cabinet substantially prevents use of the cabinet for any storage purpose and also requires that all parts of the radio, such as the loud speaker, be mounted on and moved with the front panel. This tends to unbalance the cabinet so that it must be made much deeper than otherwise would be necessary in order to avoid its tipping over when the radio is pulled out.

According to the present invention, the disadvantages of the prior art structures are overcome and the desired object attained by affixing

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the radio controls, and those parts of the radio usually and preferably directly mechanically connected thereto, to a mounting that may be moved out of the cabinet to a position in which the controls are readily accessible, by a combined sliding and tilting motion such that the mechanism supporting the mounting occupies but little more space than that occupied by the radio controls and the associated radio parts.

Other objects and advantages of the invention will appear as the description thereof proceeds, reference being had to the accompanying drawings in which:

Figure 1 is a front elevation of a radio apparatus embodying the invention;

Figure 2 is a section taken along the line 2—2 of Figure 1 showing one embodiment of the invention.

Referring to Figure 1, there is shown a radio cabinet 1 with the top front panel 2 pulled forward as by means of handle 3. This brings the control panel 4 bearing the volume, tuning and wave band control knobs 5, 7, 8 and the tone control and station selector push buttons 9, 10 to a position easily accessible from either a sitting or standing position.

As best shown in Figure 2, the control panel 4 is affixed at right angles to the front panel 2, and between these two panels is carried the bulk of the radio apparatus 11 which may be protected by a housing 12. The assembly comprising the two panels and the radio apparatus, and the protecting housing (if used), will be termed the radio unit.

The radio unit is supported from the cabinet by means of two pairs of links 13, 14 at either side thereof. If desired, a single pair of centrally disposed links may be used to accomplish the same purpose. Link 13 is pivotally attached to the radio unit and the inside of the cabinet at points 15 and 16, respectively. Link 14 is likewise pivotally attached to the radio unit and the cabinet at points 17 and 18 respectively. Suitable hardware 19, 20 may be disposed on the outside of the radio unit and the inside of the cabinet to provide strong supports for these pivotal connections.

As shown in the dotted line position of the radio unit, the link 14 and the straight line equivalent of link 13 are substantially parallel when the radio unit is completely inside the cabinet. Therefore, when the unit is first pulled out of the cabinet the motion is one of pure translation. As the tangents to the paths of motion of the pivots 15 and 17 lose their parallelism due to the difference between their effective lengths, the motion of the unit changes to that of combined translation and rotation. The rotation component, however, remains small until the unit is perhaps half way out of the cabinet.

Therefore, despite the short lengths of links 13 and 14, the unit is rotated only about 45° when completely removed from the cabinet so that the control panel 4 is in the desired position. The compound motion of the unit also reduces the clearance between the top of the unit and the top of the cabinet necessary to permit the corner 21 of the unit to move into position.

In order further to reduce the vertical dimension of the top front panel, thereby leaving undisturbed more of the cabinet space below, the link 13 is curved so as to permit it to pass over the topmost rail 22 of the lower front panel of the cabinet. The link 13 is also so shaped that the lower part near the pivot 16 abuts against the inside of the rail 22 when the radio unit is in its most extended position, thus serving as a stop. If desired, a piece of hardware (not shown) may be secured to the inside of the rail to strengthen it where it abuts against the link 13.

Preferably, a spring 23, shown only in the dotted position, is used to balance the weight of the radio unit so that it may be pulled out or pushed back without much effort. As shown, the spring is attached to the radio unit and inside of the cabinet at points 24 and 25 respectively. In the dotted position the spring lies substantially parallel to link 14 and the straight line equivalent of link 13 so that during the initial sliding or translational motion of the unit it is not extended a great deal. Also, when the unit is in repose within the cabinet and during its initial motion, it is almost balanced gravitationally about the two links 13 and 14. Hence, the initial motion of the unit is much like that of a drawer. There is only a slight unbalance biasing the unit toward the retracted position.

During the last part of the motion of the unit in which link 13 draws the front of the unit down, the back of the unit rises and extends the spring. At the same time the weight of the unit passes over center and tends to cause the unit to fall forwards. This gravitational unbalance is substantially offset by the increased spring tension so that the unit continues to move without great effort either in pushing or pulling on the part of the operator. There is just sufficient unbalance between gravity and the spring to gently bias the unit to its extended position. It will thus be apparent that under the influence of gravity and the spring there is a position of exact balance somewhere in the mid portion of the path of travel of the unit and when the unit passes over center in either direction it is gently biased to the extreme position on that side of center. This makes operation of the unit extremely easy and prevents it from receiving severe shocks as it reaches either end position.

Since the links supporting the unit are so short, and also because in the preferred embodiment two pairs of links are used, disposed at either side of the cabinet, a maximum amount of the space below the unit is available for other uses. It may be noted here that the unit must be mounted a considerable distance above the floor in order to be easily accessible by a person sitting or standing.

It is customary to make the loud speaker a separate part from the rest of the radio apparatus and that practice is illustrated in Figure 2 in which the loudspeaker 26 is mounted behind sound grille 27 in the lower front panel of the cabinet. However, even with the loudspeaker mounted in the lower part of the cabinet, there

is still a considerable space left which may be used for other purposes.

While particular linkages have been shown and described it is obvious that the lengths and positions of the links may be changed without departing from the spirit of the invention. It is also clear that certain other equivalent linkages may be used to produce the same motion. It is intended to cover by these Letters Patent all forms of the invention falling within the scope of the appended claim.

I claim:

In combination in radio apparatus, a radio unit, a cabinet having at least a front wall and a pair of side walls, said front wall being provided with an opening therein, and means for supporting said radio unit in movable relation to said cabinet, said radio unit including a radio circuit, a top panel having mounted therein controls for said circuit, a front panel fixedly mounted to said top panel and normal thereto, said front panel having a size and shape substantially identical with that of the opening of the front wall, said circuit being supported by one of said panels, and a housing for said circuit, said housing including side panels attached to said top and front panels in normal relation thereto, said housing having a cross-sectional area less than the area of said front panel and being so attached to said front panel that said panel extends beyond said housing and said top panel relatively slightly, said supporting means including a pair of mechanical linkages of differing lengths each pivotally secured at its opposite ends to one of the side portions of said housing and to the corresponding side wall of said cabinet, respectively, the shorter of said linkages being pivotally secured to said cabinet and said housing closer to said front wall and front panel, respectively, than the longer of said linkages, the lengths and pivot points for each linkage being chosen so that movement of said radio unit from a closed position to an opened position follows a constrained path which consists of a translational portion, a combined translational and rotational portion, and a smooth transitional portion between the aforementioned portions, the lengths of said portions being such that for a given size of radio unit and said opening in said front wall, said top panel is rotated to the desired inclination with a minimum total translation of said unit.

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