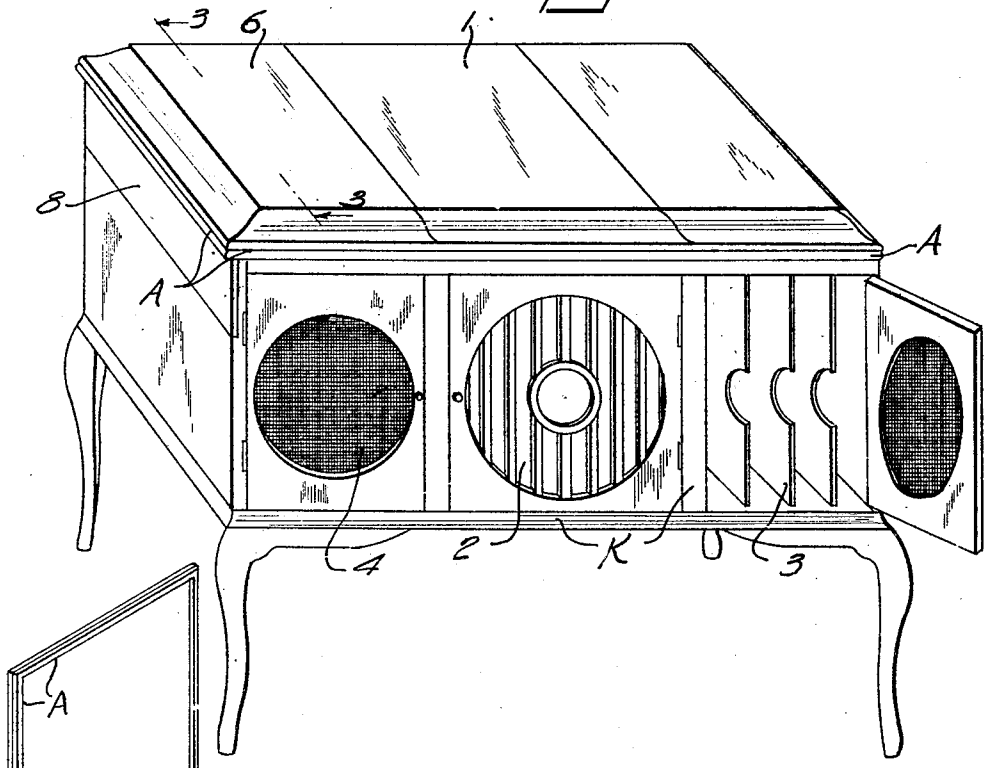
Nov. 27, 1928. 1,693,470

A. A. THOMAS

RADIO RECEIVING CABINET

Original Filed Feb. 2. 1924 2 Sheets-Sheet 1

FIG 1



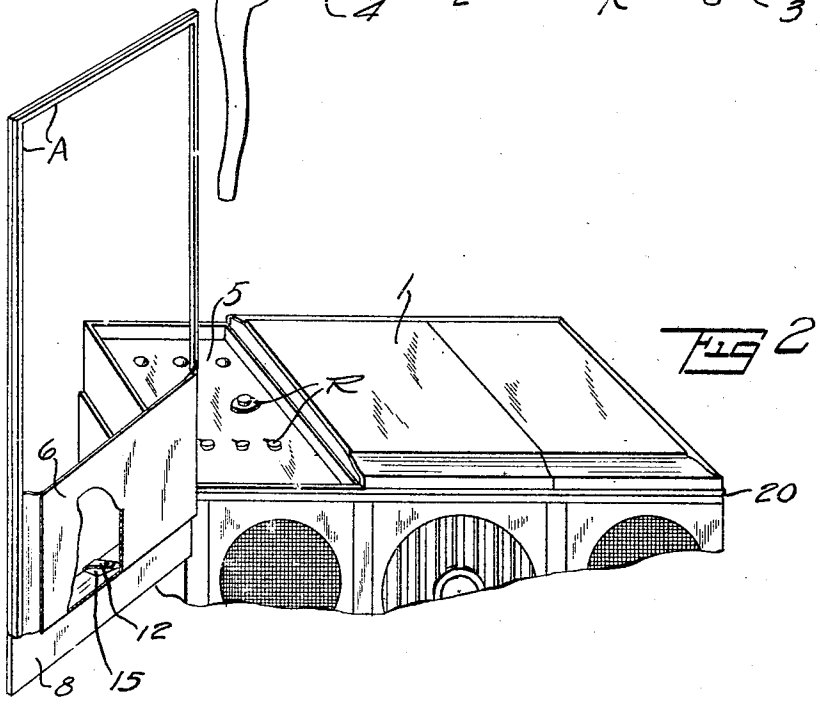


FIG 2

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FIG 3

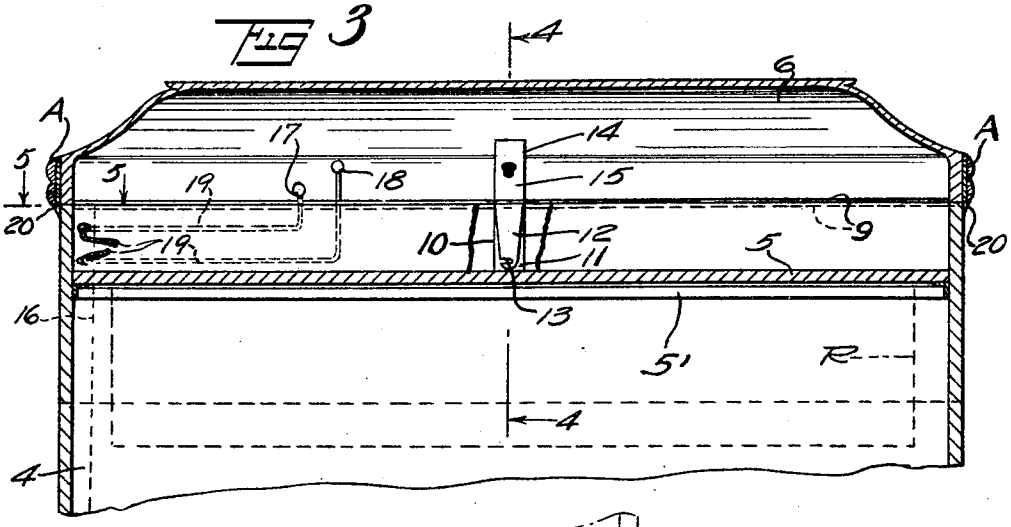


FIG 4

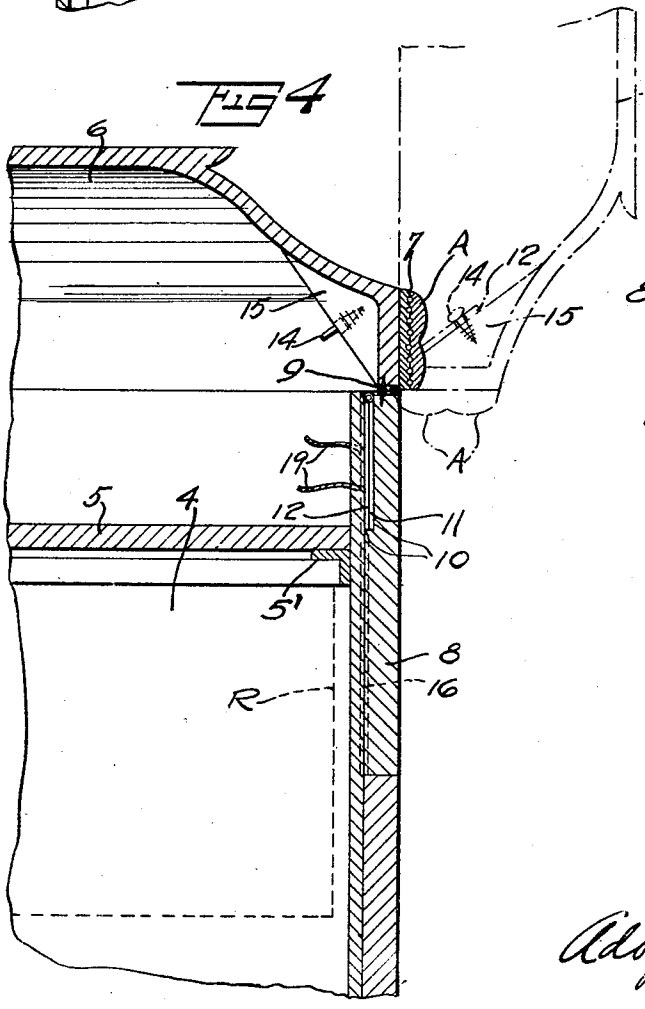
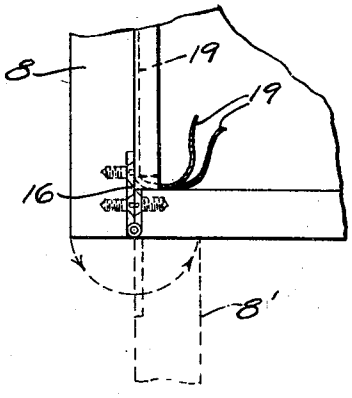


FIG 5



INVENTOR

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Patented Nov. 27, 1928. 1,693,470

UNITED STATES PATENT OFFICE.

ADOLPH A. THOMAS, OF NEW YORK, N. Y.

RADIO RECEIVING CABINET.

Application filed February 2, 1924, Serial No. 690,116. Renewed July 19, 1928.

My invention is for a new and improved self-contained radio cabinet, which contains all parts necessary to constitute a loudspeaking broadcast receiver. The radio cabinet of my invention requires no extra appurtenances and connections (such as receiving antenna, amplifying horn, circuit wires, etc.), but is as inherently complete as a phonograph or a piano. Because of its compactness, my new cabinet is especially useful in apartments, where space is limited and often very costly.

The main object of my invention is to produce a radio cabinet provided with a receiving antenna or loop as part of the cabinet structure, so that normally the antenna occupies no otherwise needed space on or in the cabinet. The antenna for the receiving set in my new cabinet is contained in a frame which is preferably in the form of a molding on the outside of the cabinet. This molding, which may be as ornamental as desired, is normally part of the outer cabinet structure, and is pivoted on the cabinet so that it may be swung into a position where the loop receives the desired broadcasting. By virtue of this construction, the receiving antenna occupies no space in the cabinet and is normally nothing more than a molding on the outside of the cabinet. This molding may be on one of the upright walls of the cabinet, or it may run along the top edge of the cabinet, depending upon the size, style and design of cabinet employed. This feature of my invention is particularly applicable in cabinets of the so-called console and period types, which in many respects are preferable to the upright cabinets, especially where a combined radio and phonograph cabinet is desired. The construction and mounting of the frame are such that when the loop is in vertical receiving position, the vertical frame does not, in any of its horizontally adjusted positions, project obstructively over the radio set in the cabinet. Consequently, the vertical loop never interferes with complete access to the radio set for tuning the same or for any other purpose.

Viewed in another aspect, my invention comprises a radio cabinet in which a receiving loop is normally supported in horizontal position. The cabinet is of greater length than width, and the longer sides of the loop when in normal horizontal position run lengthwise of the cabinet. The loop is hinged to a side of the cabinet, so that it may be swung into vertical receiving position with the longer sides of the loop vertical for maximum efficiency. In a preferred form of my invention, there is a plate or panel pivoted to a side of the cabinet, and the loop frame is mounted on the panel for raising into vertical position. When the loop is horizontal on the cabinet, the supporting plate or panel forms part of the cabinet wall. The loop normally takes up practically no space—I mean, no otherwise useful space—and the result is a loop-equipped radio cabinet of compact construction.

The foregoing and other objects and advantages of my invention will become apparent from a detailed description of the accompanying drawings, which illustrate several cabinets constructed in accordance with my invention.

Fig. 1 is a perspective view of a console type of self-contained radio cabinet embodying my invention, the receiving antenna being in normal horizontal position on the cabinet;

Fig. 2 is another view of the cabinet, showing the loop antenna in upright position and swung horizontally into the desired direction;

Fig. 3 is an enlarged transverse cross-section, approximately on line 3—3 of Fig. 1, looking in the direction of the arrows;

Fig. 4 is an enlarged fragmentary view on section line 4—4 of Fig. 3, showing the hinge and bracing connections of the lid for the radio compartment, the thrown-back position of the lid being indicated in dotted lines; and

Fig. 5 is an enlarged fragmentary view approximately on line 5—5 of Fig. 3, showing the hinged connection of the panel on which the loop, after being raised, is swung horizontally.

The cabinet, which I have indicated as a whole by K, is of the so-called console type, like a table or flat-top desk. There is a central compartment, closed by a lid 1, for phonographic reproducing mechanism, including a sound amplifying horn or chamber 2. A compartment 3 may be used for

storing phonograph records. A third compartment 4 is used for housing a radio-receiving set, which may be of any approved construction. In Fig. 2, there is a top panel or board 5, which carries the different units of a radio set R. The panel 5 may be removably supported, as on a ledge 5'. Below the panel 5, in compartment 4, may be housed the necessary radio batteries. In Figs. 3 and 4, the dotted outline R is intended to indicate diagrammatically a suitable form of receiving set mounted in compartment 4. I need not show or describe any particular form of radio set, because my present invention has nothing to do with a radio set per se, and also because various kinds and types of radio sets may be purchased in the open market for installation in compartment 4. A lid or cover 6 of suitable shape and design forms the top for the radio compartment.

Along the outer top edge of the cabinet runs a frame or molding indicated as a whole by A. The construction and design of this molding are preferably in accordance with the style and design of the cabinet itself, so that the molding normally forms, to the eye, an integral part of the outer cabinet structure. The frame or molding A contains loops of wire 7 (see Fig. 4), which are mounted in the molding in any suitable way. These wire loops constitute a so-called loop antenna, usually called a loop. The size and kind of wire to be used and the number of turns of wire, are well understood by radio experts. The precise construction of molding A is immaterial. It may be made of inner and outer strips of wood, with the loop wires 7 laid between, or it may be formed out of moldable material suitable for cabinet work, or in any other practical way, depending upon the design and material of the cabinet and upon the skill of the cabinet maker.

Molding A which is constructed separately from the cabinet, normally rests in a horizontal position along the top edge of the cabinet, as shown in Fig. 1. However, in order that the loop carried by the molding may be placed in an upright position for receiving radio impulses, the molding A is so mounted on the cabinet that it may be raised into vertical position thereon. For this purpose, the molding is hinged at one end to the cabinet. This connection is made in any practical way, but at the present time I prefer connecting the molding to the cover 6 of the radio set. This may be done by simply gluing or otherwise fastening the molding to the sides and outer end of cover 6, which is hinged to the top of a panel 8 arranged at one end of the cabinet. A long hinge for the cover 6 is shown at 9 in Fig. 4. By simply lifting the cover 6, the loop frame or molding A is automatically raised into vertical receiving position. The cover 6 forms not only a lifting means for the loop frame, but it also acts as a stiffening means for the frame, which is naturally of light construction.

Suitable means may be provided for bracing the cover 6 and molding A in raised position. In the drawings, I have shown a bracing hinge normally mounted in a recess 10 of panel 8. This hinge comprises a member 11 rigidly secured to the panel 8 and a pivoted arm 12 having a slot 13 at its free end for engaging with a turn-button 14 on a block 15 fastened inside the cover 6. Fig. 4 shows in dotted lines how the cover 6 and loop molding A are braced in upright position. It will be understood that any other practical bracing means may be employed.

Since radio-receiving loops are directional in their operation, receiving best when the plane of the loop points in the direction of the transmitting station, I have provided means for swinging the loop into the right direction after it has been raised into upright position. In the present instance, I provide for this horizontal adjustment of the loop by hinging the panel 8 at one end to the body of the cabinet, as by means of a hinge 16. This hinge may be of the form known as piano hinges, thereby insuring sufficient strength.

The leading out wires of the loop may be arranged in any convenient way. In Fig. 3, the points 17 and 18 indicate where the two ends of the loop are brought out through the cover 6. The wires 19 may either be continuations of the loop wires, or they may be separately connected to the loop at the points 17 and 18. The connecting wires 19 are preferably led toward and past the hinge 16, and from there through the cabinet into the radio compartment where they are properly connected to the radio set, as will be understood. In this way, there is but little slack required in the wires 19 to allow for the hinge movements of cover 6 and panel 8.

It will be seen from the foregoing that I have provided a simple and easily adjustable mounting for a loop on a radio cabinet as part of the cabinet structure itself. When the parts are in normal position, as shown in Fig. 1, the loop forms an integral invisible part of the cabinet structure. When it is desired to operate the radio set, it is only necessary to throw open the lid 6, thereby automatically raising the loop into vertical position and at the same time exposing the panel 5 of the radio set for tuning. The cover 6 and loop molding A are braced in upright position by attaching the brace arm 12 to the turn-button 14 on cover 6. The molding may then be swung horizontally about the hinge 16 of panel 8, until it occupies the correct receiving position, as will be clear to those skilled in the radio art. The panel 8 has a swing of approximately 180 de-

grees, as indicated in Fig. 5, where the normal position of the panel 8 is shown in full lines and the extreme open position in dotted lines 8'. This movement is sufficient to take in all the directions of the compass.

To place the parts back into normal position, it is only necessary to disconnect the brace arm 12, which may be folded down into the recess 10 of panel 8. Thereupon, the panel is swung back into normal position on the cabinet, and then the lid 6 and molding A are lowered on the cabinet into the position shown in Fig. 1. If desired, small strips or beading 20 may be fixed along the top edge of the cabinet to form a rest for the molding A when in normal position, as shown in Fig. 4. It will be understood that the molding A in normal position does not interfere with the opening and closing of the phonograph lid 1, so that the phonograph may be operated without disturbing the normal position of the radio loop.

Another advantage of the loop-carrying frame or molding A is that the length of the cabinet forms the vertical height of the loop when the latter is in receiving position. This provides for a loop of maximum efficiency, since it is understood (according to the prevailing theory) that the vertical sides or sections of a loop are the effective parts in receiving radio impulses.

It is also possible to utilize the receiving antenna or loop in frame A in horizontal position without adjusting the frame. For the reception of vertical waves, the horizontal antenna would not be in the form of a coil or loop, but the wires would be arranged and connected to act as a regular outdoor antenna consisting of one or more horizontal wires. Such an antenna in molding A would require a ground connection and be otherwise properly connected with the radio-receiving set, as those familiar with radio will understand. However, for the reception of horizontal waves—that is, electric oscillations propagated in a horizontal plane,—the loop 7 in frame A is used in a horizontal position without grounding, the same as in vertical position. The loop 7 is thus capable of performing a double function: in vertical position it picks up radiant energy transmitted by vertical waves, and in a horizontal position it receives radio-broadcasting on horizontal waves. The adjustment of the loop from vertical to horizontal, or vice versa, is quickly and easily accomplished. Of course, when the loop 7 is used in a horizontal position, the radio set R is mounted in the cabinet so as to be readily accessible. For instance, it could be mounted in the compartment closed by lid 1 which, as previously stated, can be opened and closed while the loop frame remains in horizontal position on the cabinet.

It is immaterial at which end or side the molding A is hinged on the cabinet, although it is preferable to hinge it at one end, so as to utilize the length of the cabinet for the vertical height of the loop. The frame or molding carrying the loop will vary in outline, shape, design and construction to conform to the particular size and style of cabinet for which it is intended. Since the loop-carrying molding may be formed of strips of wood, or other material easily bent into various shapes, my invention is readily adapted to any kind of cabinet suitable for radio mechanism and, if desired, also phonograph mechanism.

It will be seen from the foregoing description that my invention provides for the mounting of a loop on a radio cabinet in such a way that the loop-carrying frame is normally part of the cabinet structure itself, so that the loop is to all intents and purposes invisible and occupies no extra space. At the same time, the loop is easily adjusted on the cabinet into correct receiving position. When the radio set is not in use, the loop frame for molding is readily swung back into normal position on the cabinet. Thus, my new and novel loop mounting makes possible a self-contained radio-receiving cabinet, or a combined radio and phonograph cabinet, in which all necessary parts for radio reception are embodied in the cabinet structure itself. Such a compact self-contained radio cabinet, which requires no outside aerial or separately mounted indoor loop, is especially desirable in apartments where space must be utilized to the best advantage.

My invention is readily adapted to radio cabinets of different design and construction. Other arrangements and modifications involving the main idea of my invention will occur to those skilled in the art. It will, therefore, be understood that the particular embodiment shown in the drawings is merely an illustrative example which I have used to explain my invention and the advantages thereof.

I claim as my invention:

1. A radio cabinet having a frame running along the outer top edge of the cabinet and normally held in horizontal position on the cabinet as part of the outer structure thereof, a loop antenna mounted in said frame, a panel pivoted on said cabinet to swing in a horizontal plane and normally forming part of the outer structure of the cabinet, and means for hinging said frame to said pivoted panel, so that said frame may be raised into vertical position and then swung horizontally with said panel into the desired direction, whereby said antenna is readily adjusted into correct receiving position.

2. A radio cabinet having a compartment for a receiving set, a hinged cover for said compartment, said cover when closed forming part of the top of said cabinet, a frame running along the outer top edge of the cabi-

net and normally held in horizontal position on the cabinet as part of the outer structure thereof, said frame extending beyond said cover to encompass the entire top of said cabinet, means whereby said frame and said cover are rigidly connected together and always movable as a unit, so that said frame is raised into vertical position when said cover is swung open, and a loop antenna mounted in said frame.

3. A radio cabinet having a compartment for a receiving set, a panel pivoted on said cabinet to swing in a horizontal plane and normally forming part of the outer structure of the cabinet, a cover for said compartment hinged to said panel, said cover when closed forming part of the top of said cabinet, a frame running along the outer top edge of the cabinet and normally held in horizontal position on the cabinet as part of the outer structure thereof, said frame being secured to said hinged cover and movable therewith, so that said frame is automatically raised into vertical position when said cover is swung open, said pivoted panel permitting horizontal swinging of the vertical frame and cover, and a loop antenna mounted in said frame and adapted to be operatively connected with a receiving set in said compartment.

4. A radio cabinet having a compartment for a receiving set, a panel pivoted on said cabinet to swing in a horizontal plane and normally forming part of the outer structure of the cabinet, a cover for said compartment hinged to said panel, said cover when closed forming part of the top of said cabinet, a frame running along the outer top edge of the cabinet and normally held in horizontal position on the cabinet as part of the outer structure thereof, said frame being secured to said hinged cover and movable therewith, so that said frame is automatically raised into vertical position when said cover is swung open, said pivoted panel permitting horizontal swinging of the vertical frame and cover, a loop antenna mounted in said frame and adapted to be operatively connected with a receiving set in said compartment, and a collapsible brace secured to said panel and adapted to be removably connected to said cover for locking said frame and cover in vertical position.

5. A radio cabinet having a molding along the outer top edge thereof and normally arranged in a horizontal position on the cabinet as part of its outer structure, said cabinet having a compartment for a radio set, means for adjustably mounting said molding on the cabinet in such a way that the molding may be raised into vertical position and then swung horizontally without projecting over said compartment in any of its vertical positions, and a receiving antenna in said molding.

6. A combined radio-phonograph cabinet having a compartment for a radio set and a second compartment for phonograph mechanism, a top closure on said cabinet for normally closing said phonograph compartment, a frame running along the outer top edge of the cabinet and normally held in horizontal position on the outside of the cabinet as part of the outer structure thereof, means for so hinging said frame on said cabinet that the frame may be raised into vertical position without moving said closure, means for permitting horizontal adjustment of the vertical frame, and a loop antenna in said frame and adapted to be connected to a radio set in said first-mentioned compartment.

7. In radio apparatus, a cabinet having an upright wall with a horizontally swinging member pivoted thereon, said member normally forming part of the outer structure of said wall, a frame hinged to said member so as to be held in vertical as well as in horizontal position on said cabinet, said frame when horizontal resting on said cabinet as a part thereof, said frame when vertical being horizontally adjustable by means of said member, and a loop carried by said frame.

8. In a radio cabinet of the console type having a length greater than its width, a frame constructed to fit around the top edge of said cabinet and normally resting thereon in horizontal position, said frame forming a permanent part of the outer cabinet structure, a receiving loop carried by said frame and connected with a radio set in the cabinet, means for hinging said frame to said cabinet so that said frame may be raised into vertical position with the longer sides vertical for greater efficiency of the loop, and a pivotal connection to permit horizontal adjustment of the vertical loop.

9. In a radio cabinet having a length greater than its width, a loop-carrying frame extending over the top of said cabinet and normally supported in horizontal position, means for hinging a short side of said frame to the adjacent side of the cabinet, so that said frame and loop may be swung into vertical receiving position at one side of the cabinet with the longer sides of the loop vertical, and means for bracing the frame in vertical position.

10. A radio cabinet having a frame running along the outer top edge of the cabinet and normally held in horizontal position on the cabinet as part of the outer structure thereof, a loop antenna mounted in said frame, a panel pivoted on said cabinet to swing in a horizontal plane and normally forming part of the outer structure of the cabinet, means for hinging said frame to said pivoted panel, so that said frame may be raised into vertical position and then swung horizontally with said panel into the desired direction, whereby said antenna is readily adjusted into correct receiving posi-

tion, and a bracing connection between said panel and said frame for holding the latter in upright position.

11. A radio cabinet having a compartment for a receiving set, a panel pivoted on said cabinet to swing in a horizontal plane and normally forming part of the outer structure of the cabinet, a cover for said compartment hinged to said panel, said cover when closed forming part of the top of said cabinet, a frame running along the outer top edge of the cabinet and normally held in horizontal position on the cabinet as part of the outer structure thereof, said frame being secured to said hinged cover and movable therewith, so that said frame is automatically raised into vertical position when said cover is swung open, said pivoted panel permitting horizontal swinging of the vertical frame and cover, a bracing connection between said panel and said cover for holding said frame in upright position, and a loop antenna mounted in said frame and adapted to be operatively connected with a receiving set in said compartment.

12. A radio cabinet having a loop-carrying frame normally supported thereon in horizontal position, means for hinging said frame to a side edge of said cabinet, so that said frame may be swung into vertical position at one side of the cabinet, means for bracing the frame in vertical position, and pivoted means for swinging the vertical frame horizontally into the desired receiving position, said pivoted means being so arranged that the vertical frame does not in any of its adjusted positions extend over the cabinet.

13. A radio cabinet having a receiving loop mounted thereon in normal horizontal position, means for hinging said loop to a side of the cabinet so that the loop may be raised to vertical position, and means for pivoting the raised loop near the front end of said side, whereby the vertical loop may be swung horizontally through practically 180 degrees without projecting beyond the rear of the cabinet nor over the same.

14. A radio cabinet or box having a substantially rectangular top, the front and rear edges of said top being longer than the two side edges, a cover for said top comprising separately hinged sections, one of said sections being hinged at the side of the box so that it may be swung into substantially vertical position, and a loop antenna carried by said last-mentioned cover section and extending beyond said section so as normally to fit along the entire top of the box, whereby the longer sides of said loop are vertical when said cover section is raised.

15. In a radio cabinet, a loop-carrying frame normally supported in horizontal position on said cabinet, a normally stationary member pivoted to said cabinet, and means for hinging said frame to said member, said double hinge connections being so arranged that the loop frame is swung from horizontal to vertical position while said member remains stationary, said member being movable on its pivot for horizontal adjustment of the vertical frame.

16. A radio cabinet having a strip pivoted thereon at or near one corner of the cabinet, said strip normally resting against the cabinet as part of its outer structure, a frame hinged to one edge of said strip and normally resting in horizontal position on said cabinet, said frame being movable from horizontal to vertical position while said strip remains stationary, and a loop carried by said frame, said pivoted and hinged connections of said strip and said frame permitting adjustment of the loop into vertical position and horizontal adjustment of the vertical loop.

17. In radio receiving apparatus including a radio cabinet, a horizontally movable member supported by said cabinet on the outside thereof, and a rectangular radio loop pivotally mounted on said member, whereby said loop is adjustable toward and away from said cabinet and rotatable into the desired receiving direction with the two longer sides of the loop vertical, said loop being flat against the outside of said cabinet when said horizontally movable member is in normal position.

18. In a radio cabinet having a length greater than its width, a rectangular loop normally supported in horizontal position within the outer confines of the cabinet, the longer sides of the loop running lengthwise of the cabinet, and means for hinging said loop to a side of the cabinet, so that said loop may be swung into vertical receiving position at one side of the cabinet with the longer sides of the loop vertical for maximum efficiency.

19. A radio receiving cabinet having an outer framework substantially rectangular in outline, the front and rear walls of said framework being longer than the sides thereof, a rectangular loop carried by said cabinet and normally lying in horizontal position within the outer confines of the cabinet, the longer sides of the loop being parallel with the front and rear sides of the cabinet, a member hinged to a side wall of said cabinet and normally forming part of the outer cabinet structure, and means for mounting the loop on said member so that the loop is raised into vertical receiving position when the supporting member is swung out of normal position substantially through a right angle, the longer sides of the loop being vertical when the loop is in upright position.

20. A radio receiving cabinet having an outer framework substantially rectangular in outline, the front and rear walls of said framework being longer than the sides thereof, a pivoted panel normally forming part of

one of the outer vertical sides of said framework, a normally horizontal support on said pivoted panel, and a rectangular loop carried by said support, said panel and support being so arranged that normally the loop is in horizontal position substantially within the confines of the cabinet framework, the longer sides of the loop being parallel with the front and rear of the cabinet, said support being movable to upright position to raise the loop into vertical receiving position at one side of the cabinet with the longer sides of the loop vertical for maximum efficiency.

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