June 3, 1930. O. E. MARVEL 1,761,019

RADIO APPARATUS

Filed July 13, 1925 3 Sheets-Sheet 1

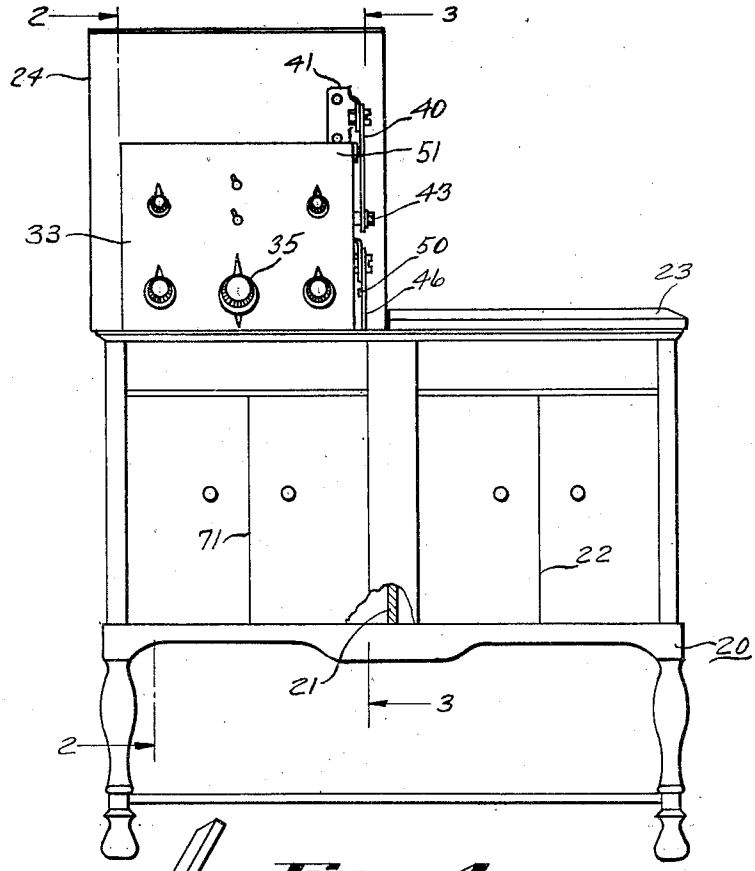


Fig. 1.

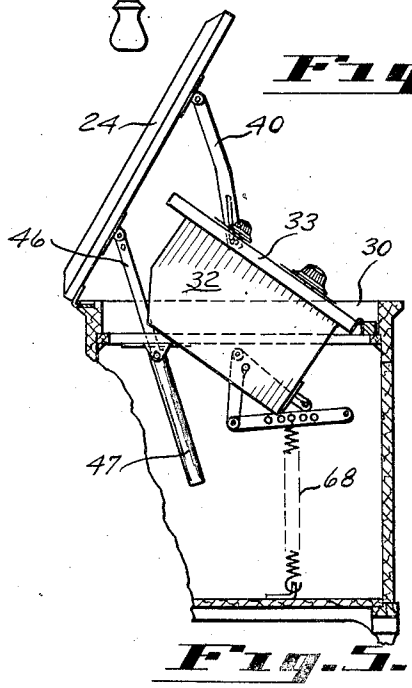


Fig. 5.

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RADIO APPARATUS

Filed July 13, 1925 3 Sheets-Sheet 2

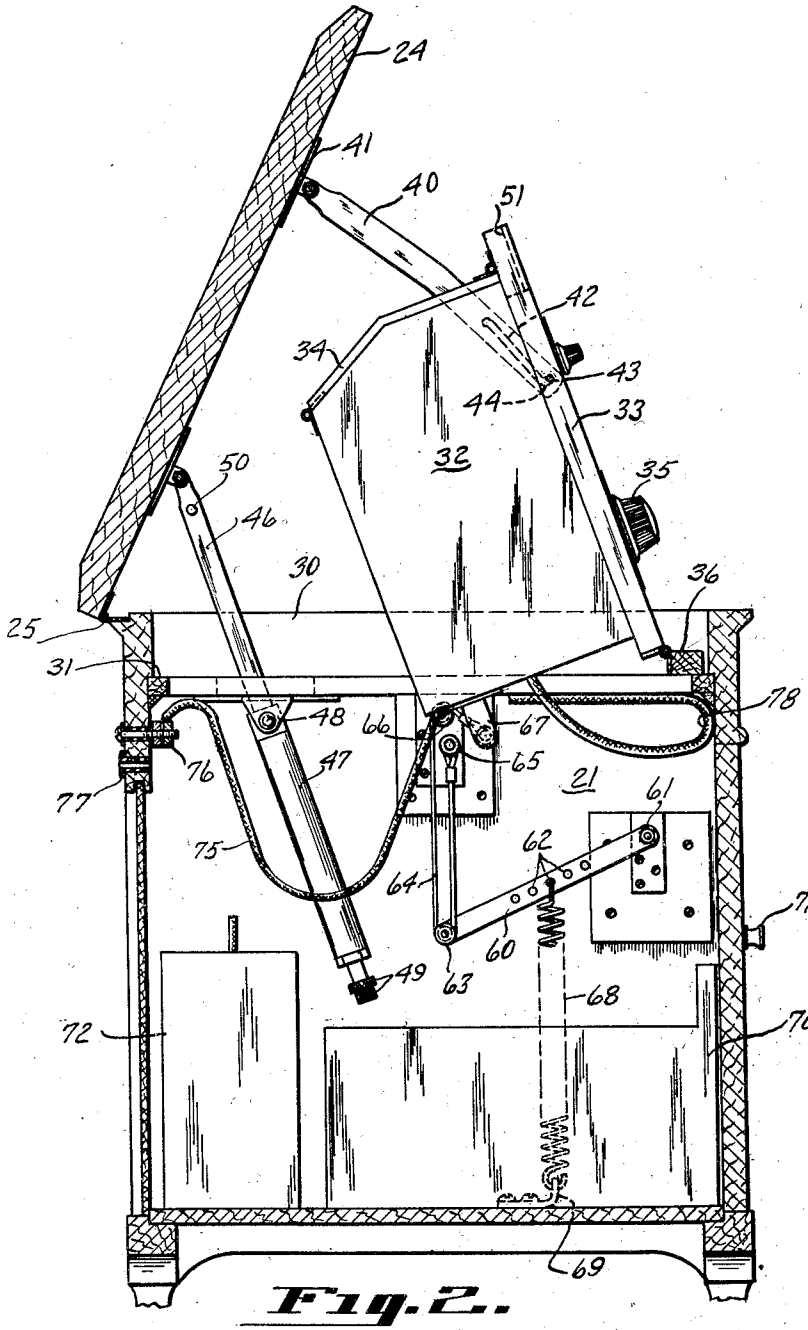


Fig. 2.

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June 3, 1930. O. E. MARVEL 1,761,019

RADIO APPARATUS

Filed July 13, 1925 3 Sheets-Sheet 3

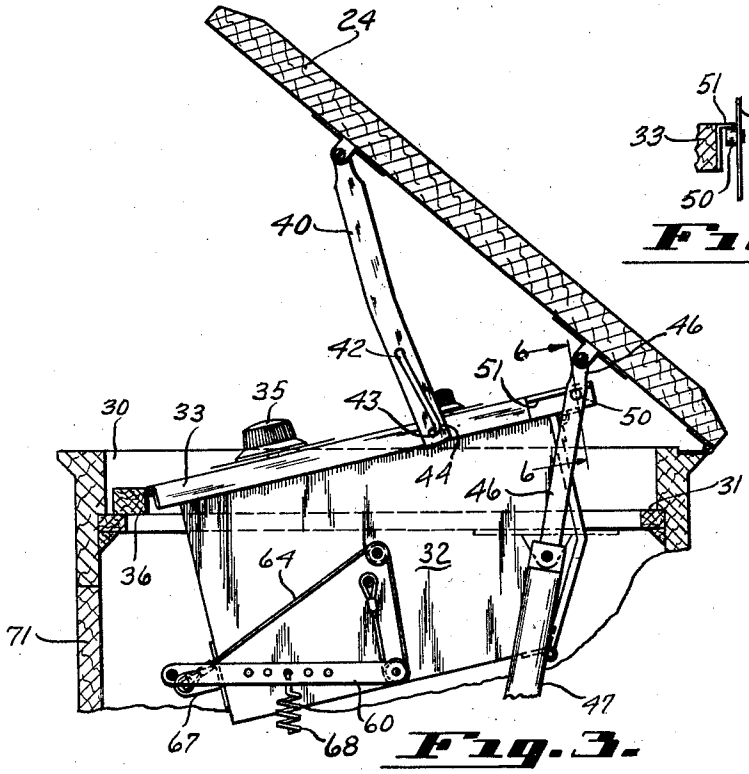


Fig. 3.

Fig. 6.

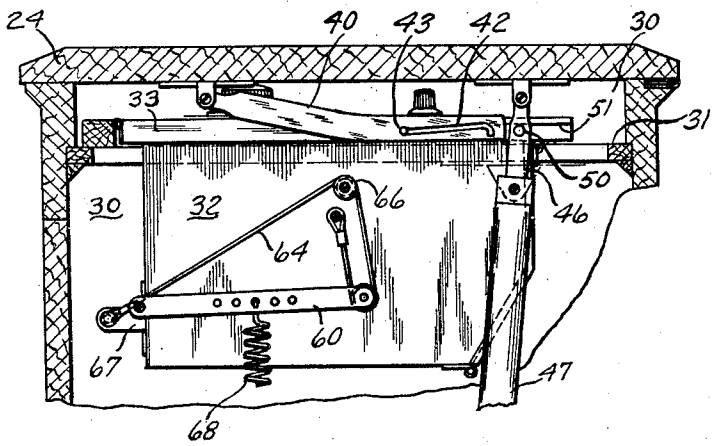


Fig. 4.

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UNITED STATES PATENT OFFICE

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RADIO APPARATUS

Application filed July 13, 1925. Serial No. 43,163.

The present invention relates to radio apparatus and particularly to radio apparatus presenting the appearance of an article of furniture.

One of the principal objects of this invention is to provide a cabinet having a recess adapted to receive a radio unit therein in non-operating position, and which radio unit is supported to swing to an operating position.

Another object of the invention is to mount a radio unit within a covered recess of a cabinet, the arrangement being such that movement of the cover results in a concurrent movement of the radio unit from non-operating or concealed position to an operating or exposed position.

Other objects of the invention will be apparent from the following description taken in connection with the accompanying drawings in which:

Fig. 1 is a front elevation of a phonograph cabinet embodying the present invention, the radio unit being shown in an exposed or operating position;

Fig. 2 is a vertical section taken on the line 2—2 of Fig. 1 parts being shown in elevation;

Fig. 3 is a fragmentary sectional view taken on the line 3—3 of Fig. 1 showing the radio unit in a second operating position;

Fig. 4 is a view similar to Fig. 3 showing the radio unit in concealed or non-operating position;

Fig. 5 is a reduced section similar to Fig. 2 showing the radio unit in an intermediate position; and

Fig. 6 illustrates a detail of construction.

The present invention is herein for convenience shown and described as embodied in a phonograph cabinet, but it will be understood that the invention in its broad aspect is susceptible of use in other forms of cabinets, and further, is capable of other embodiments than the one herein illustrated.

Referring to the drawings 20 designates a phonograph cabinet of conventional form which may have a central dividing wall 21 to provide the same interiorly with right hand and left hand compartments or recesses. The right hand compartment may house a phonograph comprising the phonograph mechanism and a loud speaker or horn. In the form of cabinet here illustrated, the phonograph mechanism is preferably mounted in the upper part of the cabinet and the horn is mounted in the lower part of the cabinet behind the doors 22, this arrangement being the usual one. Access may be gained to the phonograph mechanism for the purpose of operating the same by raising a cover 23 which overlies the right hand portion of the cabinet.

A cover 24 overlies the left hand portion of the cabinet, and when lowered, matches with the cover 23 to provide a top for the cabinet. When the cover 24, which is preferably hinged at 25 at the rear of the cabinet, is raised or opened, it serves to give access to an opening or recess 30 in the left hand portion of the cabinet. Secured in the recess 30 near the opening or upper part thereof is a ring-like supporting plate 31, the opening of which is adapted to receive a radio unit 32. The radio unit as here illustrated consists of a radio panel 33 to the rear of which may be secured the radio receiving apparatus, which receiving apparatus is preferably enclosed in a housing 34. The control mechanism for the radio receiving apparatus comprises operating handles such as dials 35 mounted upon the front of the radio panel 33, as is usual in radio apparatus. The radio unit is hinged and supported at its front or lower edge upon the hinge block 36 in such fashion as to permit the radio unit to be swung upwardly to operating positions, as illustrated in Figs. 2 and 3, or to be swung downwardly to a non-operating position, as illustrated in Fig. 4.

In the non-operating position, shown in Fig. 4, the cover 24 covers the recess 30 and the radio receiving unit is concealed from view. An operating connection is provided between the cover 24 and the radio unit 32 whereby raising of the cover 24 will cause a concurrent movement of the radio unit from its concealed non-operating position to an exposed operating position, and likewise, lowering movement of the cover 24 will cause the radio unit to take a position within the re-

cess 30 with its radio panel concealed from view.

The operating connection between the cover 24 and the radio unit 32 comprises a link 40 pivotally connected at its upper end to a bracket 41 secured to the under side of the cover, the lower end of the link 40 being provided with a slot 42 which has sliding engagement with a pin 43 extending from one edge of the radio panel. The slot 42 is provided with a notch or angled portion 44 at its lower end to receive the pin 43 in such manner as to catch or hold the link 40 and the panel 33 in immovable position. Such a position is illustrated, for example, in Fig. 2, wherein the link 40 holds the radio unit in an upright inclined position.

Pivotally secured to the cover 24 near its hinge 25 is a plunger or bar 46 which is adapted to be slidably received in the cooperating cylinder or casing 47 pivoted at 48 to the under side of the plate 31. The connection between the plunger 46 and the casing 47 is preferably such as to provide a check or cushion to retard the downward movement of the cover 24 in such manner that the cover 24 is caused to move slowly towards its closed position. The cushioning action may be regulated by means of suitable regulating means such as the screws illustrated at 49, and plunger 46 and casing 47 are preferably provided with a yielding catch of such strength as to hold the cover 24 in the open position shown in Fig. 2. The construction and arrangement of the plunger 46, casing 47 and internal parts have not been illustrated in detail since these parts constitute in effect a check for the movement of the cover 24 which may be of the conventional construction commonly used in phonograph cabinets of the type herein shown in checking the downward movement of the cover. The plunger 46 is provided near its upper end with an inwardly extending knob or lug 50 which is adapted to cooperate with a flange or shoulder 51 extending outwardly from a plate secured to the adjacent edge of the panel 33. The lug 50 cooperates with the shoulder 51 in a novel manner to raise the radio unit during the initial stage of its upward movement from its concealed or non-operating position, and also to assist in locking the radio unit in one of its operating positions.

The operation of the present invention may be understood upon reference first to Fig. 4 in which the radio unit 32 is shown in its concealed or non-operating position, the cover 24 being down and closing the recess 30 in which the radio unit is received. When the cover 24 is raised the lug 50 engages the flange 51 of the radio unit to raise the latter, as illustrated in Fig. 3, the lug 50 sliding along the flange 51 as the radio unit is raised. The lug 50 continues to raise the radio unit until the pin 43, which has been sliding along the slot 42, engages the lower end of the slot 42 after which the control of the lifting movement is transferred from the plunger 46 and lug 50 to the link 40 and cooperating pin 43. The position of the parts at the moment that the pin 43 engages the lower end of the slot 42 is illustrated in Fig. 3. Panel 33 and control dials 35 are now inclined at an angle convenient for operation and the parts may be locked in the postion shown by moving the link 40 rearwardly so as to cause the pin 43 to lock in the notched end 44 of the groove 42. The position just described is one of the operating positions of the apparatus.

If desired, the panel of the radio unit may be raised still farther to the position illustrated in Fig. 2 which is also in operating position, the panel being here shown as more nearly vertical and readily accessible to a person sitting in front of the cabinet. To elevate the panel from the position shown in Fig. 3, the cover 24 is simply lifted to further raise the panel with respect to its hinge 36, as shown in Fig. 5, after which the operator may pull the panel 33 forwardly to the position shown in Fig. 2. The parts may be locked in the position shown in Fig. 2 by engaging the pin 43 in the notch 44, the cover 24 being held against further backward or upward movement by the plunger 46 which is at the upper limit of its movement in the casing 47.

The weight of the radio unit 32, the cover 24, and cooperating parts may be substantially balanced so as to enable the parts to be moved to their several positions with little exertion on the part of the operator and one form of such balancing means will now be described. A lever 60 is pivoted at 61 to a supporting block which may be secured to the dividing wall 21 or to any other convenient part. Lever 60 is provided intermediate its ends with a series of apertures 62, and at its outward end it carries a pulley 63 which receives a flexible cord or cable 64 having one end fixedly secured to the dividing wall of the cabinet by a pin 65. The flexible cord 64 also passes over a fixed pulley 66 carried by the dividing wall or partition 21 and the other end thereof is secured to lug 67 carried by the housing 34 of the radio unit. A coil spring 68 is hooked into one of the apertures 62 of the lever 60 and is connected at its lower end by means of a bracket 69 to the lower part of the cabinet, as best shown in Fig. 2.

Referring particularly to Figs. 2, 3, and 4, it will be noted that when the radio unit is in the upper operating position, shown in Fig. 2, spring 68 is contracted, but as the radio unit is lowered the lever 60 is caused to rock upwardly about its pivot 61 thus placing the spring 68 under tension. The

spring 68 thus exerts a progressively increasing lifting or balancing force as the radio unit swings from the upright to the horizontal position, and hence effects a balancing of the moving parts. By proper proportioning of the parts and adjustment of the spring 68 in the apertures 62, the radio unit, cover, and other members may be maintained in substantial balance for all positions, though preferably the adjustment is such that there is a slight tendency or bias of the parts downwardly towards the non-operating position. Fig. 5 illustrates the position of the parts when the plunger 46 reaches the upper limit of its movement in the casing 47 to prevent further opening of the cover 24, at which point there is preferably provided yielding means within the casing 47 tending to hold the cover in the raised position. Preferably the construction and the arrangement of the counter-balancing means and the adjustment of the spring 68 is such that its downward pull or bias is insufficient to overcome the resistance introduced by the yielding means within the sleeve 47, and hence the parts may be left in the position illustrated in Fig. 5 as a third, though not a locked, operating position.

The construction and arrangement of the radio unit 32 and of the mounting therefor is such as to leave room in the left hand part of the cabinet for a case or drawer 70 for the storage of phonograph records which drawer is accessible from the front through the doors 71. The batteries for the radio apparatus may be stored in the rear of the cabinet behind the record drawer 70 and the phonograph horn, as indicated in dotted lines at 72. A cable 75 is brought out from the radio housing 34 and contains wires for the antenna and ground connections. These wires may be secured to binding posts 76 at the rear of the cabinet and the wires from the antenna and from the ground may be brought in through insulated bushings 77 and connected to the binding posts 76. A cable 78 carrying the wires for the battery connections is also brought out from the radio housing 34 and is secured to the interior of the cabinet in such manner as not to impede the free movement of the radio unit. The cable 78 also contains the wires leading to the reproducer associated with the horn in the right hand part of the cabinet.

From the foregoing it will be apparent that the present invention provides a simple and neat arrangement for concealing a radio unit within a cabinet or an article of furniture and for moving it into an exposed position where it may be operated. It is to be noted, further, that the panel of the radio unit may take several different operating positions thereby enabling the operator to adjust it to the position which is most convenient for its operation. Another advantage of the present invention is that the radio unit may be readily applied to existing phonograph cabinets thus facilitating the conversion of such cabinets, at small expense, into combination phonograph and radio cabinets.

While the form of apparatus herein described constitutes a preferred embodiment of the invention, it is to be understood that the invention is not limited to this precise form of apparatus, and that changes may be made therein without departing from the scope of the invention which is defined in the appended claims.

What is claimed is:

1. A radio apparatus, comprising a cabinet, said cabinet having an opening to give access to the interior thereof and a movable cover for said opening, a radio unit including a panel mounted in the cabinet, means adjustably mounting said panel so that it may be moved and automatically retained in a plurality of exposed stable positions in relation to said cover when said cover is fully open, and means connected between the cover and said unit whereby the latter is caused to move concurrently with movement of said cover.

2. A radio apparatus, comprising a cabinet having a recess therein, a radio unit including radio control mechanism, said radio unit being adapted to be received in a non-operating position within said recess with the control mechanism at the top of the unit, means for supporting said radio unit about a fixed axis for movement from said non-operating position to an operating position wherein the control mechanism is at the front of the unit, a cover for said recess, a pivotal mount for said cover spaced parallel to said fixed axis, means interconnecting said cover and said unit so that said unit may be moved to operating positions when said cover is moved to a raised position about its own axis and means for automatically supporting said unit in a plurality of exposed positions.

3. A radio apparatus, comprising a cabinet having a recess therein, a radio unit including radio control mechanism, said radio unit being adapted to be received in a non-operating position within said recess, and means for supporting said radio unit for movement between said non-operating positions, and a plurality of operating positions, means for normally urging said radio unit towards one of said positions, and means for automatically securing the same in said other positions.

4. In a device of the class described, a cabinet having a recess in its upper portion, a top cover for said recess, a hinge for said cover at the rear of the recess, a swinging panel member movable into and out of said recess, a pivot mount for said member at the front of said recess, said panel member and cover being movable in relatively opposite directions about spaced parallel axes, means interconnecting the rear of said cover and the rear

of said panel member to raise said panel member upon initial movements of said cover, additional means interconnecting more forward portions of said cover and said panel member to further raise the panel member by further opening movements of said cover, and means for locating said panel member in a plurality of different positions.

In testimony whereof I hereto affix my signature.

ORIN E. MARVEL.