Nov. 5, 1963 R. DERENG 3,109,687

PORTABLE RADIO RECEIVER CABINET

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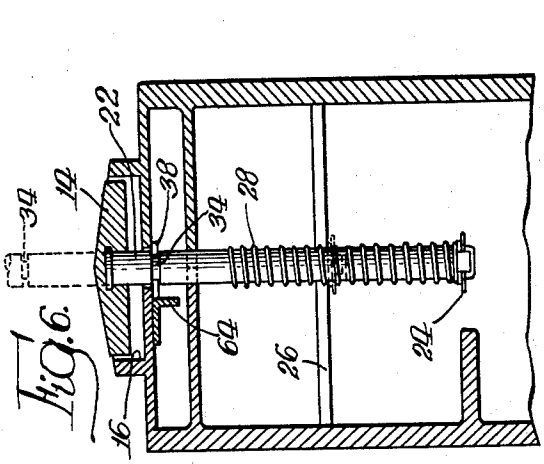


FIG. 6.

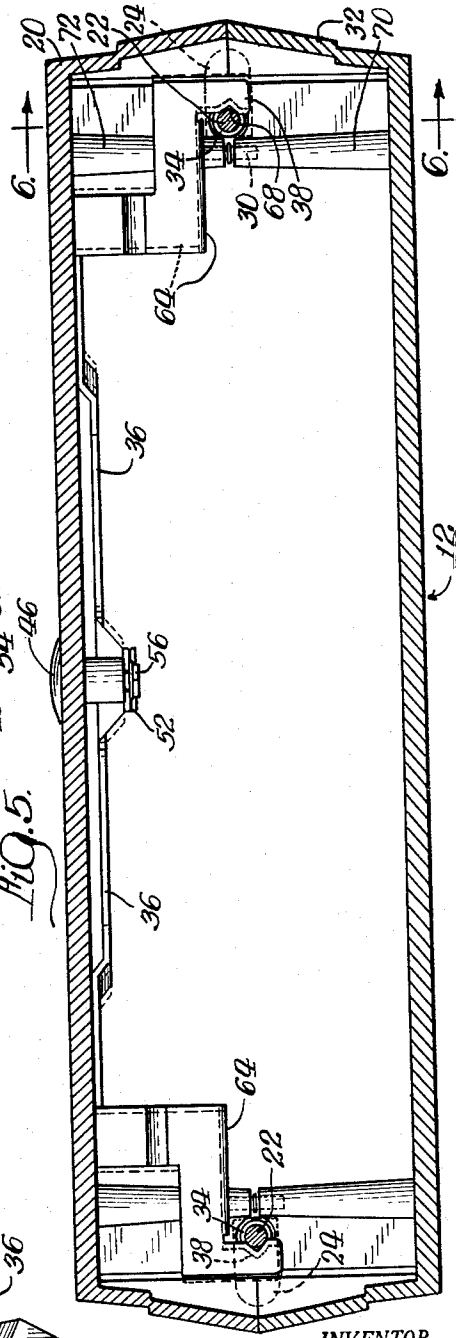


FIG. 5.

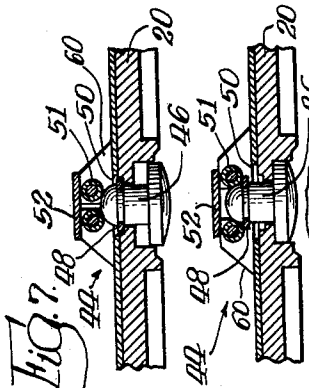


FIG. 7.

FIG. 8.

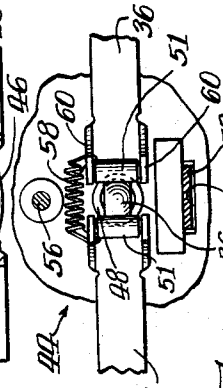


FIG. 9.

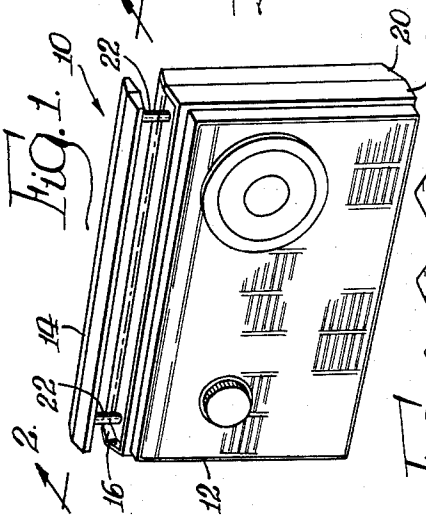


FIG. 1.

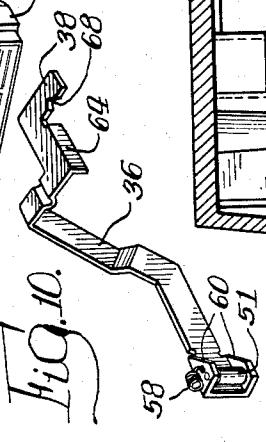


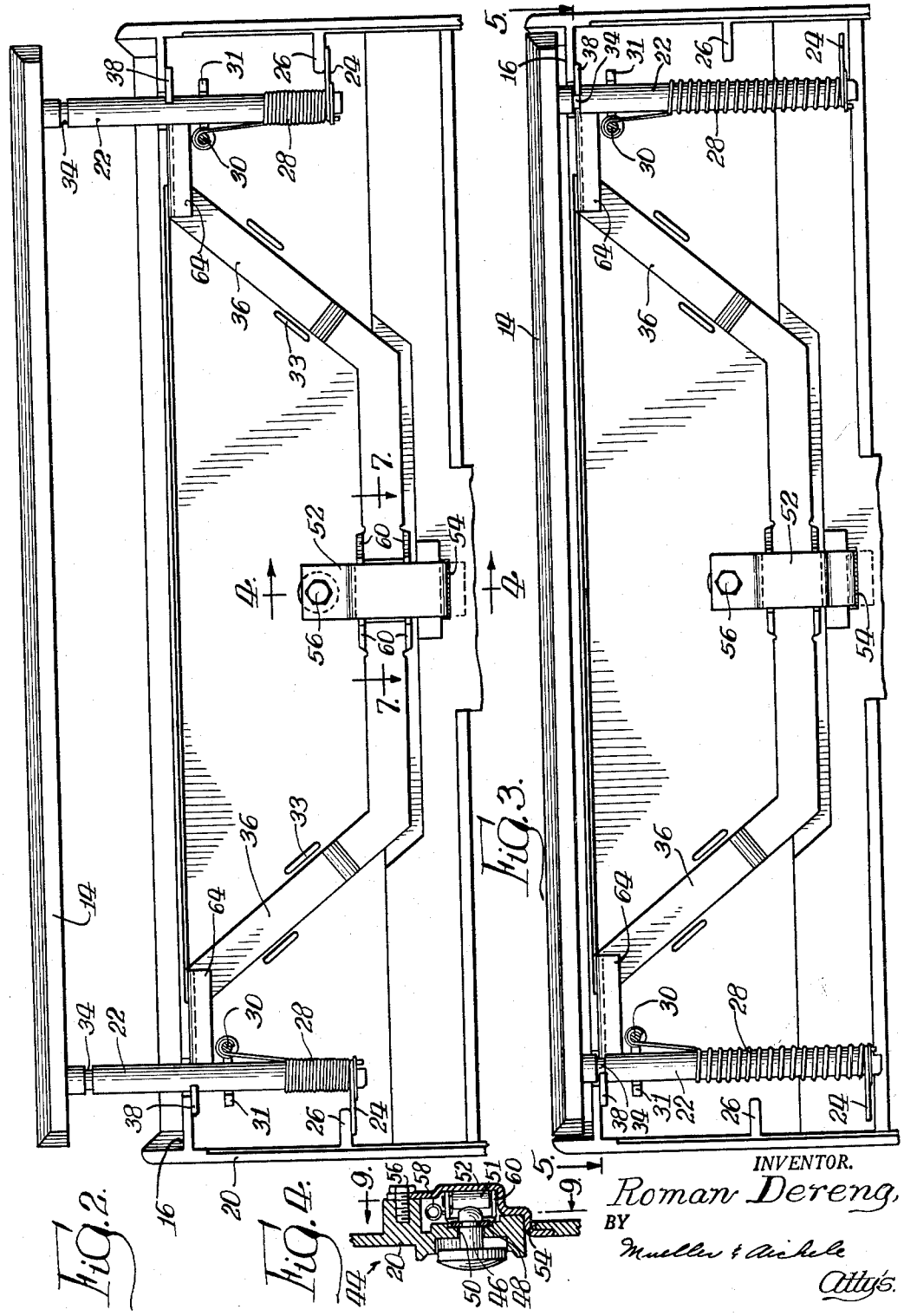
FIG. 10.

INVENTOR.
Roman Dereng,
BY Mueller & Aichele
Attys.

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United States Patent Office 3,109,687 Patented Nov. 5, 1963

3,109,687

PORTABLE RADIO RECEIVER CABINET

Roman Dereng, Des Plaines, Ill., assignor to Motorola, Inc., Chicago, Ill., a corporation of Illinois

Filed Feb. 6, 1961, Ser. No. 87,370
6 Claims. (Cl. 312—244)

This invention relates to portable radio receiver cabinets, and the like, and more particularly to a retractable handle assembly particularly useful with a portable radio receiver cabinet.

A portable radio receiver is generally of a size and configuration which allows the radio to be transported from place to place in the hand of the person using the radio. Once the radio has been placed in position for playing it serves as a table model radio and should therefore assume the same general appearance and configuration possessed by a table model radio. A means of accomplishing this is by designing a cabinet with a retractable handle assembly.

It is therefore an object of this invention to provide a new and improved portable radio receiver cabinet.

Another object of the present invention is to provide a portable radio receiver cabinet which, by virtue of its handle assembly, may, in addition to its portability, serve as a table model radio.

Still another object of this invention is to provide a retractable handle assembly in a portable radio receiver cabinet.

A feature of the present invention is the provision of pushbutton operated, spring biased retaining means adapted to release a spring biased handle assembly for a portable cabinet.

Still another feature of the present assembly is the provision of a portable radio receiver cabinet handle assembly having a release assembly comprising two spring biased actuating arms operable by means of a single, centrally located pushbutton.

Another feature of this invention is the provision of latching means comprising a pair of actuating arms spring biased to one another and separable to release a spring biased handle assembly by means of a pushbutton acting against rollers disposed upon adjacent ends of the actuating arms.

In the accompanying drawings:

FIG. 1 is a perspective view of a portable radio receiver assembly incorporating the features of the present invention;

FIG. 2 is a fragmentary sectional view of the cabinet of FIG. 1 as seen on lines 2—2 of FIG. 1;

FIG. 3 is a view similar to FIG. 2 showing the handle in its closed position;

FIG. 4 is a sectional view of the receiver cabinet pushbutton assembly taken on the lines 4—4 of FIG. 2;

FIG. 5 is a sectional view taken on lines 5—5 of FIG. 3;

FIG. 6 is a fragmentary sectional view taken on line 6—6 of FIG. 5;

FIG. 7 is a sectional view along the line 7—7 of FIG. 2 and showing the assembly in its non-actuated position;

FIG. 8 is a view like that shown in FIG. 7 but with the pushbutton assembly in its actuated position;

FIG. 9 is a sectional view of the pushbutton assembly along the line 9—9 of FIG. 4; and

FIG. 10 is a perspective view of the actuating arm used in the present invention.

In accordance with the present invention a portable cabinet, such as a radio receiver cabinet, is provided having a pushbutton actuated, spring loaded, retractable handle assembly. In its rest position the handle resides in a recessed area formed at the top of the cabinet and is held in this position by a latching assembly comprising a pair of spring biased actuating arms with flange portions received in annular recesses formed in a pair of support rods fixed to the handle. The rods carry coil springs which, with the handle in its closed position, are energized so that upon release of the arms from annular grooves formed in the handle rods, the spring forces the handle to extend to an extended position for use.

The retaining portions of the actuating arms are released from the handle latching position by means of a pushbutton assembly disposed upon the back of the cabinet. Upon depression of the pushbutton the actuating arms, which have rollers mounted on adjacent ends thereof, move radially outwardly from the axis of the pushbutton by virtue of the rolling relationship between the pushbutton and the actuating arm rollers and thereby are disengaged from the recesses in the support rods. The actuating arms are biased together by a coil spring connected between the two and are held against the pushbutton by a retaining bracket mounted to the cabinet. Stop means are fixed to the handle rods and, in cooperation with flanges formed in the cabinet, restrict upward movement of the handle.

Referring now particularly to FIG. 1, the portable radio receiver 10 is shown having a retractable handle 14 in its open position. The cabinet 12 of the receiver 10 is formed with a recess 16 in the top portion thereof to receive the handle 14 when it is moved to its closed or home position as seen in FIG. 3.

FIG. 2 shows the back portion 20 of the cabinet 12 with the handle 14 in the open position as illustrated in FIG. 1. The handle 14 is shown having a pair of handle rods 22 mounted thereon. Each of the rods 22 has a rod stop 24 mounted at, and protruding from, the lower end thereof. These rod stops 24, of oblong configuration, cooperate with the flanges 26 formed in the cabinet 20 to restrict upward movement of the handle 14 when the pushbutton is actuated. Coil springs 28, mounted on the rods 22 in the surrounding relationship thereto, are fixed at one end to the lower ends of the rod 22 and at the other end to pins 30 mounted on the back side of the front panel of the cabinet 12. Supports 31 are formed in the back side of the front panel to hold the rods 22 and also to limit vertical movement of the arms 36 within the cabinet. Rails 33 are also formed in the back side of the front panel to restrict axial movement of the arms 36. In FIG. 2 spring 28 is shown in its compressed, non-energized state with the handle 14 in the open position. Each of the handle rods 22 is formed with an annular recess 34 near the upper portion thereof, the function of which will be given in the detailed description of FIG. 3. A pair of actuating arms 36 cooperate with the pushbutton assembly described below to release the latching of handle 14 and allow it to assume its open position.

FIGS. 3 and 6 are further views of the cabinet showing the handle 14 in its closed or latched position. In this position handle 14 is received in the recess 16 to be flush with the top of the cabinet 12. The coil springs 28 are expanded to their energized positions by virtue of the downward movement of the rods 22. The handle 14 is locked in the closed position when it is depressed into the cabinet and flange portions 38 of the arms 36 fall into the annular grooves 34 of the rods 22. The actuating arm flanges 38 are held in locked relationship in the grooves 34 by means of a coil spring 58, shown in FIG. 9, which is connected between the arms 36 biasing them together.

Considering now FIGS. 4 and 7–9, the pushbutton assembly, indicated generally by the reference numeral 44, includes pushbutton 46 having a plastic O ring 48 mounted thereon to maintain the button in place within an opening 50 formed in the back portion 20 of the cabinet 12. The button 46 abuts upon the rollers 51 which are mounted within a yoke portion 60 formed on the ends of the actuating arms 36 (FIG. 10). The assembly is maintained

in position by a retainer bracket 52 having one end disposed through an opening 54 in the back portion 20 of the casing 12 and the other end held in engagement with the back portion 20 by a screw 56. Spring 58 has its ends fixed to each of the arms 36 to bias them together. FIG. 8 shows the pushbutton 46 compressed to separate the rollers 51 thereby releasing the flanges 38 from the annular grooves 34 of the rods 22.

FIG. 5 is a sectional view taken on lines 5—5 of FIG. 3 and shows the cabinet 12 comprising a front portion 32 and a back portion 20 (FIG. 1). One of the actuating arms 36 is shown comprising an elongated body portion having an end portion 64 formed at right angles to the body portion (see also FIG. 10). The flange 38 is formed upon the end portion 64 and has a V-groove 68 formed therein. The V-groove 68 is provided to grip the rod 22 when the end portion 38 falls into the annular groove 34 of the rod 22. The position of the end portion 64 when the handle is open is shown in phantom, as is the pin 30 and rod stop 24. The pin 30 is held in pin post 70 formed in the front cabinet portion 32 and fits into mating pin receiving post 72 formed in the back cabinet portion 20.

The present invention provides a bushbutton actuated spring biased, retractable handle assembly for a portable radio receiver or the like wherein the handle, when not in use, is moved downwardly into a recess formed in the receiver cabinet to remain flush therewith until released by the pushbutton. When it is desired to use the handle for carrying, the pushbutton is depressed, moving a pair of actuating arms, connected to the handle assembly, radially outwardly thereby releasing the spring biased handle to its operable position.

It is obvious therefore that a radio receiver incorporating the features of the present invention is a streamlined, compact and attractive table model radio and, in addition, is a useful portable receiver having a "self-contained" retractable handle protruding from the cabinet when in use.

Among the advantages of a radio receiver cabinet made in accordance with this invention are the double function, economy of manufacture, sturdy design and overall attractiveness, all of which may be deemed of considerable importance in a device as described.

I claim:

1. A retractable handle assembly for a portable cabinet including in combination, a handle portion having a gripping area thereon and a pair of support means projecting therefrom, said cabinet having an opening to receive said support means with said handle in a first retracted position, resilient means for retaining said support means with said handle in a second position extended for use, latching means mounted in said cabinet and engageable with said support means for retaining said handle in said first position, said latching means including a pair of linearly slidable actuating arms extending remotely from said support means and engageable with said support means for retaining said handle in said first position, means on said cabinet to displace said actuating arms to disengage same from said support means and allow said resilient means to bias said support means upwardly to move said handle to said second position to facilitate manual carrying of the cabinet.

2. In a portable cabinet having a recess formed in the top portion thereof, a retractable handle assembly including; a handle portion, a pair of support means fixed to said handle portion, said support means projecting from said handle portion into openings formed in said cabinet, latching means mounted in said cabinet and engageable with said support means to maintain said handle in the closed position enclosed in the cabinet recess, said latching means including a pair of linearly displaceable actuating arms extending remotely from said support means and located flat against the interior surface of said cabinet, spring means biasing said support means to a second position extended for use, pushbutton means

on said cabinet having linear movement transverse to that of said arms, said pushbutton means being engageable with said actuating arms to release said actuating arms from said support means and allow said spring means to bias said support means to said second position to move said handle upwardly from said cabinet recess to a position above the cabinet to facilitate carrying of the cabinet.

3. In combination with a portable cabinet having a recess formed in the top thereof, the retractable handle assembly including; an elongated handle portion, a first support rod fixed at one end thereof to one end of said handle, a second support rod fixed at one end thereof to the other end of said handle, said rods projecting from said handle into openings formed in the top of said cabinet, said rods being formed with an annular groove in the upper portions thereof, latching means maintaining said rods with said handle in a closed position in said recess, spring means disposed upon said rods biasing said rods upwardly, means including said latching means to move said rods from said closed position comprising a pair of actuating arms, each of said arms having a flange portion formed thereon to engage said annular grooves with said handle in said closed position, roller means disposed at the other end of said arms, spring means adapted to bias said actuating arms together, a pushbutton disposed to an opening formed in the back of said cabinet and abutting upon said roller means, bracket means retaining said roller means in abutting relationship to said pushbutton, whereby said pushbutton upon actuation thereof moves said roller means apart thereby separating said actuating arms and releasing said flanges from said annular grooves to allow said first named spring means to bias said rods upwardly to move said handle portion from the cabinet recess to a position above the top of the cabinet.

4. In combination with a portable radio receiver cabinet having a recess formed in the top portion thereof, a retractable handle assembly including; a handle portion, support means fixed at opposite ends of said handle portion and extending into openings formed in the top of said cabinet, latching means engageable with said support means adapted to maintain said support means within said cabinet with said handle portion disposed within said recess formed within the top of the cabinet, said latching means including first and second actuating arms, a flange formed on the end portion of said first named arm, a flange formed on the end portion of said second named arm whereby said flanges are engageable with said support means to maintain said handle in its closed position within said recess, spring means biasing said support means in an upward manner, means adapted to restrict the upward movement of said support means, said last named means comprising a flange formed on the inner wall of said cabinet, means adapted to release said flanges from said support means to allow said spring means to force said support means upwardly including a pushbutton movably disposed through an opening formed in the back of the cabinet, roller means disposed upon said actuating arms in abutting relationship with said pushbutton, bracket means fixed to the cabinet biasing said rollers to said pushbutton, ring means disposed on said pushbutton retaining said pushbutton within said opening in said cabinet, whereby inward movement of said pushbutton moves said actuating arms apart thereby releasing said flanges from said support means to allow said first named spring to bias said support means upwardly until restrained by said restraining means.

5. In combination with a portable cabinet having a pair of actuating arms adapted to release a retractable handle assembly, a pushbutton assembly to actuate said arms comprising a roller bearing rotatably mounted upon the end portion of each of said actuating arms, a coil spring fixed at one end to one of said end portions and at its other end thereof to the other of said end portions

to bias said end portions together, a pushbutton movably disposed in an opening formed in the cabinet in abutting relationship to said rollers, a ring mounted upon said pushbutton to retain said pushbutton within said opening in the cabinets, a retaining bracket mounted in the cabinet to maintain said rollers in abutting relationship to said pushbutton whereby manual inward movement of said pushbutton separates said rollers overcoming said spring to separate said actuating arms and thereby release the handle assembly to an upward position.

6. In combination with a portable cabinet, the retractable handle assembly including; an elongated handle portion, a first support fixed at one end thereof to one end of said handle, a second support fixed at one end thereof to the other end of said handle, said supports projecting from said handles into openings formed in the top of said cabinet, first spring means biasing said supports upwardly, a pair of linearly displaceable actuating arms, each of said arms having a flanged portion formed thereon, means on said supports engageable with said flanged portions to lock said handle portion in retracted position, each of said arms having a bearing portion thereon, said bearing portions being positioned adjacent one another, second spring means adapted to bias said bearing portions together, manually operable means for displacing said bearing portions against the bias of said second spring, thereby separating said actuating arms and releasing said flanges from engagement with said means to allow said first spring means to bias said rods upwardly moving said handle portion from a retracted position to an unretracted position.

References Cited in the file of this patent

UNITED STATES PATENTS

751,685	Sanford	Feb. 9, 1904
1,972,626	Jones	Sept. 4, 1934
2,104,838	Leonard	Jan. 11, 1938
2,554,509	Sparklin	May 29, 1951