Feb. 21, 1950 B. SINGER 2,497,963

ATTACHMENT FOR RADIO SETS

Filed Jan. 2, 1947

FIG. 1.

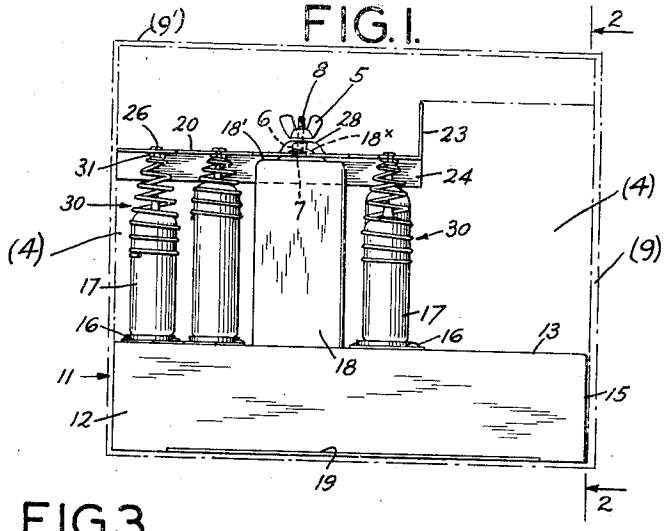


FIG. 3.

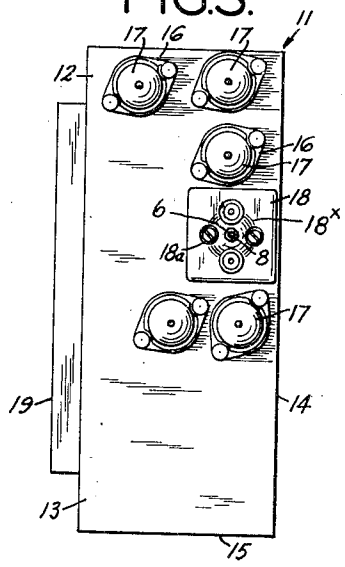


FIG. 2.

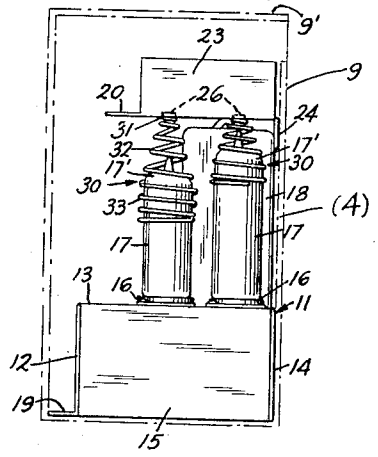


FIG. 4.

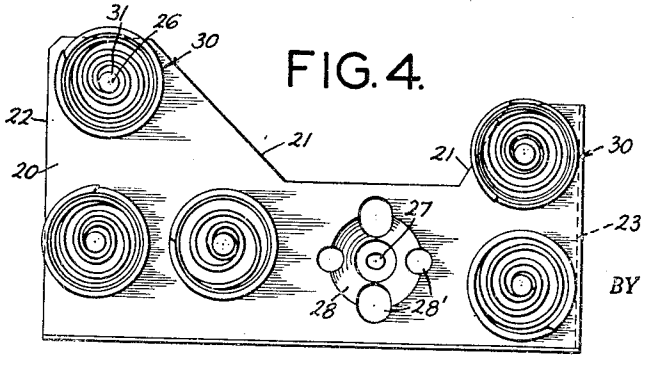
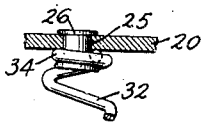


FIG. 5.



INVENTOR.
BENJAMIN SINGER
BY William S. Sherman
ATTORNEY.

Patented Feb. 21, 1950

2,497,963

UNITED STATES PATENT OFFICE

2,497,963

ATTACHMENT FOR RADIO SETS

Benjamin Singer, Brooklyn, N. Y., assignor to Teletone Radio Corporation, New York, N. Y., a corporation of New York

Application January 2, 1947, Serial No. 719,685

8 Claims. (Cl. 250—16)

1

This invention relates to an attachment for radio receiving sets which is disposed in a predetermined relation to the tubes and other parts of the set (in a manner fully described in the specification) for the purpose of bettering the performance and serviceability of such sets in the respects which will be more fully enumerated in the ensuing statement of the objects of the invention, and further amplified in the body of the specification.

The attachment is particularly adapted for radio sets containing "low-heat" efficiency tubes. In such sets it is important for the proper operation of the low-heat tubes to dissipate the filament heat away from the tube, especially its upper portion, at which region the heat naturally tends to concentrate because of upward convective flow and the presence there of the heat generating surfaces.

Accordingly, one of the objects of this invention is to provide an attachment, which is inexpensive and readily secured in place in the radio set, for conducting away the heat from the tubes thereof, particularly from their upper region.

An allied object is a unitary means for reducing tube temperature.

Another object of the invention is an attachment for a radio receiving set which will provide, or serve as, electrostatic shields for the individual tubes.

A further object is an attachment for holding the tubes in place in their sockets, especially when subjected to movement or shock, particularly in the case of portable radio sets. An allied object is a unitary attachment for radio sets which will secure the tubes against damage during shipment.

For the attainment of the foregoing and such other objects as may appear or be pointed out herein, I have shown one embodiment of my invention in the accompanying drawing, wherein:

Fig. 1 is a front view of the chassis of a small radio receiving set, showing the improved attachment in place;

Fig. 2 is an end view of the radio set and attachment of Fig. 1;

Fig. 3 is a top view of the radio chassis;

Fig. 4 is a bottom view of the improved attachment; and

Fig. 5 is a detail showing the securement of the helical-spiral spring to the plate of the attachment.

The chassis of a small radio receiving set is shown in Figs. 1–3; it comprises a raised base 11 formed from plate material to present a front panel 12, a rear panel 14, a raised floor 13 and an end (right, in Fig. 1) panel 15. On the raised floor 13 are secured a plurality (five, as shown) of sockets 16 for receiving radio tubes 17, and the container for an intermediate-frequency transformer unit 18. The variable condenser is not shown, but this would be placed on the base 11, i. e., raised floor 13 thereof, in the space provided to the right, Fig. 1, of the tubes. The chassis is fitted in the radio cabinet, represented in dot-and-dash lines and designated 9, and secured to the floor thereof by screws or the like passed through lip flange 19 projecting forwardly of front panel 12.

2

The improved attachment comprises a plate 20 of suitable metal or alloy (as will be more fully considered herein). Plate 20 is of sufficient length, Fig. 1, and width, Fig. 2, to overlie the tops of all five tubes 17 and the top of the container for an intermediate-frequency transformer unit 18. Plate 20 may be rectangular but as shown in the figures, see particularly Fig. 4, it is made generally rectangular having a large cut-out 21, and a wide left side 22, Fig. 4, and a narrower right side from which uprises a lateral flange 23, more fully considered subsequently. This configuration, and also size, of plate 20, is dictated by the positional arrangement of the tubes and will, of course, vary in different radio sets. In any event, the size and configuration of plate 20 is such that it overlies all the tubes.

Attachment plate 20 may be secured in any suitable manner, but I prefer to attach it to the top surface 18' of the container for an intermediate-frequency transformer unit 18, which is commonly formed with a central bump 18×. For this purpose, a threaded bolt 8 is passed through a central aperture in top bump 18× with its head 7 in underlying relation to the shaped plate forming the can bump. Attachment plate 20 has a raised (depressed as viewed in Fig. 4) portion 28 corresponding to bump 18× positioned to properly locate the plate relative to the radio tubes, the bump 18× resting within raised portion 28, as best shown in Fig. 1. Depressed portion 28 is provided with openings 28', see Fig. 4, corresponding to the vent openings 18a at the top of the container for an intermediate-frequency transformer unit, see Fig. 3, and a central aperture 27, Fig. 4, through which passes the bolt 8. The latter is secured in upright position by means of a nut 6 disposed at the surface of can bump 18×, see Fig. 1. To more firmly hold the plate against turning relatively to the container 18, plate 20 has a longitudinal, downwardly turned,

lip or flange 24 which abuts against the rear side thereof. Lip or flange 24 also serves as an abutment for the upper edge portion of a back-board 4 which closes the rear opening, more accurately, most of the rear, see Fig. 1, of cabinet 9. That is, back-board 4 is contoured along its upper edge to correspond in height to the level of plate 20 (left portion, Fig. 1) and to the top edge of lateral flange 23 (right portion Fig. 1). It is thus seen that the rear edge of lateral flange 23 also serves as an abutment for back-board 4, which is secured by screws (not shown) to base 12 of the chassis.

Located on plate 20 and spaced corresponding to the tubes 17 are a plurality of spring elements 30 held in suspended relation to the underside of the plate. The spring element 30 is what might be termed helico-spiral in that the lowermost portion 33, see Fig. 2, is truly helical while the intermediate portion 32 is spiraled outwardly from a central point of securement 31. The details of the spring securement is shown in Fig. 5 where it will be seen that the spiral portion 32 of the spring is brought to a small, centrally disposed ring 34, and that the plate 20 has an aperture 25. A rivet 26 or other fastening means is passed through plate aperture 25 and spring ring 34, and headed over to secure the spring in place.

The inside diameter of the helical portion 33 of the springs is somewhat larger than the outside diameter of the radio tubes 17, so that the springs are snugly fitted over the top portion of the tubes. The height of lateral flange 23 of the attachment plate 20 is such that, when the attachment is properly secured to the top of container 18, with the radio tubes nested within the suspended springs 30, and the chassis together with the attachment placed within radio cabinet 9, as in Fig. 2, the top edge of lateral flange 23 is disposed a short distance below the top wall 9' of the cabinet.

The attachment plate 20 is fabricated of a metal or alloy having a high index of heat conductivity and of high electrical conducting value. The spring elements 30 are likewise fabricated of a metal of similar properties in addition to that of resiliency. The heat generated by the filament of the tubes and concentrated at the upper portion of the tubes is conducted by the spring elements to the plate 20 which, because of its considerable surface area, is effective to dissipate the heat, and this to very considerably lower the temperature thereof. Additionally, the plate 20 is in direct contact with the container 18 so that the heat is conducted thereto and via the metal surface of the container to the metallic base 11, so that the heat receiving capacity of the base and its large radiating surface thereof both contribute in rapid dissipation of the filament heat.

The metallic spring elements 30 also function as electrostatic shields to carry away any electrostatic charges on the tube surface, via the plate 20, container 17 and base 11.

The spring elements fit snugly about the tubes and thus maintain them in upright position. The inwardly spiraled portion 32 of the spring elements is disposed immediately above the rounded top 17', Fig. 2, of the tubes, so that any upward movement of the tubes from their sockets is resisted by the springs which, moreover, by reason of their resiliency, serve as cushions to take up any shock or impact to which the tubes themselves might be subjected to.

I claim:

1. An attachment for radio receiving sets having a cabinet housing a chassis upon the base of which are mounted the radio tubes and container for an intermediate-frequency transformer unit the latter being of the type having an apertured top bump, said attachment comprising a metallic plate dimensioned and configurated to overlie all of said tubes and container and having a raised portion shaped and located to receive the said top bump of the container, said raised portion having openings alignable with the said apertures of the bump and a central aperture, a threaded bolt passing through the center of the said bump, with its head therewithin, and through said plate aperture, a nut locking the bolt in upright position, a wing nut for securing the attachment plate in place, said attachment plate having a depending flange along a longitudinal edge abuttable with the side of the container and an uprising flange at a transverse edge underlying the top wall of said cabinet, a plurality of helico-spiral springs having a spiraled portion tapering outwardly from the center axis of the spring and a helical portion of an internal diameter somewhat greater than the tube diameter, one end of said spring being coiled to present a small ring at said center axis, and rivets engaged through said spring rings to secure the springs in suspended relation to the attachment plate, said springs being located on the plate at points aligned with the tubes, the upper portions thereof being snugly received in the helical portions of the springs with the rounded ends thereof within the said spiraled portions of the springs.

2. An attachment for radio receiving sets having a cabinet housing a chassis upon which are mounted the radio tubes and container for an intermediate-frequency transformer unit, the latter being of the type having a top bump, said attachment comprising a metallic plate dimensioned and configurated to overlie all of said tubes and container and having a raised portion shaped and located to receive the said top bump of the container, a threaded bolt passing through the center of the said bump, with its head therewithin, and through said plate, a nut for securing the attachment plate in place, said attachment plate having an uprising flange at a transverse edge underlying the top wall of said cabinet, a plurality of helico-spiral springs having a spiraled portion tapering outwardly from the center axis of the spring and a helical portion of an internal diameter somewhat greater than the tube diameter, and rivets engaging one end of said spring rings to secure the springs in suspended relation to the attachment plate, said springs being located on the plate at points aligned with the tubes, the upper portions thereof being snugly received in the helical portions of the springs with the rounded ends thereof within the said spiraled portions of the springs.

3. An attachment for radio receiving sets having a chassis upon which are mounted the radio tubes and container for an intermediate-frequency transformer unit, said attachment comprising a metallic plate dimensioned and configurated to overlie all of said tubes and container and having an aperture, a threaded bolt passing through the top of the container with its head therewithin and through said plate aperture, a nut for securing the attachment plate in place, said attachment plate having a depending flange along a longitudinal edge abuttable with

the side of the container, a plurality of helico-spiral springs having a spiraled portion tapering outwardly from the center axis of the spring and a helical portion of an internal diameter somewhat greater than the tube diameter, said springs being secured in suspended relation to the attachment plate, at points aligned with the tubes, the upper portions thereof being snugly received in the helical portions of the springs with the rounded ends thereof within the said spiraled portions of the springs.

4. An attachment for radio receiving sets having a cabinet housing a chassis upon which are mounted the radio tubes and container for an intermediate-frequency transformer unit, said attachment comprising a metallic plate dimensioned and configurated to overlie all of said tubes and container and secured to the top of the container, said attachment plate having a depending flange along a longitudinal edge abuttable with the side of the container and an uprising flange at a transverse edge underlying the top wall of said cabinet, a plurality of helico-spiral springs having a spiraled portion tapering outwardly from the center axis of the spring and a helical portion of an internal diameter somewhat greater than the tube diameter, said springs being secured in suspended relation to the attachment plate at points aligned with the tubes, the upper portions thereof being snugly received in the helical portions of the springs with the rounded ends thereof within the said spiraled portions of the springs.

5. An attachment for radio receiving sets having a chassis upon which are mounted the radio tubes and container for an intermediate-frequency transformer unit, said attachment comprising a metallic plate dimensioned and configurated to overlie all of said tubes and container and secured to the top of the container, a plurality of helico-spiral springs having a spiraled portion tapering outwardly from the center axis of the spring and a helical portion of an internal diameter somewhat greater than the tube diameter, said springs being secured in suspended relation to the attachment plate at points aligned with the tubes, the upper portions thereof being snugly received in the helical portions of the springs with the rounded ends thereof within the said spiraled portions of the springs.

6. An attachment for radio receiving sets having a cabinet housing a chassis upon which are mounted the radio tubes and container for an intermediate-frequency transformer unit, said attachment comprising a metallic plate dimensioned and configurated to overlie all of said tubes and container and secured to the top of the container, said attachment plate having a depending

flange along a longitudinal edge abuttable with the side of the can and an uprising flange at a transverse edge underlying the top wall of said cabinet, and a plurality of helico-spiral springs secured to the underside of the plate in encircling relation to the said tubes.

7. An attachment for radio receiving sets having a cabinet housing a chassis upon which are mounted the radio tubes and container for an intermediate-frequency transformer unit, said attachment comprising a metallic plate dimensioned and configurated to overlie all of said tubes and container and secured to the top of the container, said attachment plate having a depending flange along a longitudinal edge abuttable with the side of the container and an uprising flange at a transverse edge underlying the top wall of said cabinet, and a plurality of springs secured to the underside of the plate in encircling relation to the said tubes.

8. An attachment for radio receiving sets having a cabinet open at the rear and housing a chassis upon the base of which is mounted the radio tubes and container for an intermediate-frequency transformer unit and a backboard for closing the rear opening of the cabinet, said attachment comprising a metallic plate dimensioned and configurated to overlie all of said tubes and container and secured to the top of the container, said attachment plate having a depending flange along a longitudinal edge abuttable with the side of the container and an uprising flange at a transverse edge, said backboard being secured to said chassis base with the major portion of its upper edge aligned with the attachment plate, the remaining portion being aligned with the top of said lateral flange of the attachment plate, said longitudinal flange and the rear edge of said transverse flange of the attachment plate serving as abutment for the backboard.

BENJAMIN SINGER.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,587,120	Haddock	June 1, 1926
1,816,718	Bond	July 28, 1931
2,441,234	Dillon	May 11, 1948

FOREIGN PATENTS

Number	Country	Date
311,704	Great Britain	Feb. 13, 1930
334,861	Great Britain	Sept. 8, 1930