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D. H. MITCHELL

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RADIO RECEIVING SET

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Fig. 1.

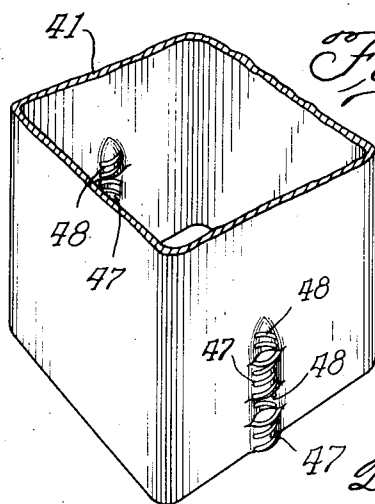
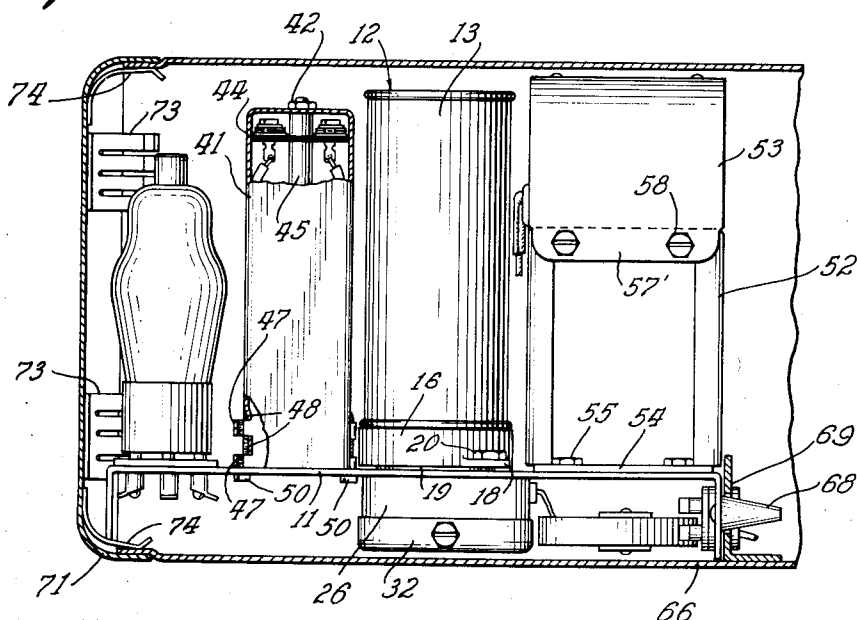


Fig. 2.

Inventor:
Donald H. Mitchell.
By: - Foreman L. Mueller
Att'y.

UNITED STATES PATENT OFFICE

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RADIO RECEIVING SET

Donald H. Mitchell, Chicago, Ill., assignor to
Galvin Manufacturing Corporation, Chicago,
Ill., a corporation of Illinois

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1 Claim. (Cl. 250—16)

This invention relates to radio chassis and especially to shielding and structural features thereof. The invention relates particularly to a radio chassis for use in automobiles and the like, where there are special problems of compactness and shielding.

Although the need for shields around various parts of radio sets has long been recognized, the problem of providing adequate shielding at a minimum cost and in a minimum space has remained vexatious. It was particularly hard to secure adequate shielding around a vibrating interrupter such as is used in producing high voltage B current from a storage battery as in automobile radios. In automobile radios this problem is aggravated by the need for extreme compactness which places the interrupter very close to other parts of the radio system which would be affected by even very weak interference from the interrupter.

The problem with respect to the interrupter has been solved by providing a light weight container and magnetic shield for the interrupter in combination with a cast base provided with lugs for screwing it firmly against the frame of the chassis and interposing a resilient contact member between the chassis frame and the base. This resilient contact member makes contact with both the base and the chassis frame at a plurality of points. The combination of these features provides an extremely low resistance shield structure at a very low cost.

Another form of shield which is of especial value in connection with parts of the set which need not be magnetically shielded, is the provision of a tubular shield having a threaded screw receiving hole formed thereon by punching straps out of the plane of the wall of the shield with punching dies which have threads formed thereon whereby threads are formed on the punched straps.

Other features and advantages of my invention will be apparent from the following description taken with the drawing, in which:

Fig. 1 is a view mainly in elevation of a radio chassis carrying thereon the shield of my invention and illustrating further, in section, a portion of the housing for the chassis.

Fig. 2 is a fragmentary detail illustration in perspective of one form of shield shown in Fig. 1 assembled on a chassis.

Although this invention may take numerous forms, only one chassis has been chosen for the purpose of illustration. The chassis includes a chassis frame 11 on which various parts of the receiving set are mounted. One of the parts

which has given the most trouble from the standpoint of shielding is the vibrating interrupter 12 which includes an electromagnet operating one or more pairs of make and break contacts. These interrupters have heretofore been provided with shields 13 formed of sheet iron usually tin-plated. This shield in formation and material resembles an ordinary tin can.

In the past this shield has proved inadequate, but I have found that it can be made quite satisfactory by combining with it a thick base 16 which telescopes over the end of the shield 13. This base 16 is preferably cast of die metal and may be secured to the shield 13, in any suitable manner. Although the drawing shows little difference in thickness between the base 16 and the shield 13, it should be understood that as a matter of fact the base 16 would be several times as thick as the ordinary sheet metal used in such shields. The base 16 may have provided thereon integral lugs 18 through which bolts 20 may extend to and engage the chassis frame 11 or a nut therebelow to secure the base 16 firmly on its seat.

It is preferred that, instead of placing the base 16 directly on the chassis frame 11, a contact ring 19 be placed between the base 16 and the chassis frame 11. This contact ring is preferably made of a metal which is a fairly good and resilient conductor, such as phosphor bronze or hard drawn copper. This will provide a low resistance connection between the base and the chassis frame at a plurality of points. At the same time the base will provide a low resistance connector between the chassis frame and the shield 13 and thus ground the entire shield 13 with very low resistance, effectively eliminating interference from the interrupter within the shield.

It should be understood, of course, that any other apparatus besides the interrupter could be located within the shield 13, although the structure just disclosed has been designed with particular reference to the interrupter on account of the severe shielding requirements which it presents.

An inverted cup shield 26 is secured to the chassis frame beneath the shield 13 for housing some of the elements for the circuit of the interrupter. A removable bottom or cover 32 is secured to the shield 26 as shown in Fig. 1.

A metal shield 41 is shown in detail in Fig. 2 and illustrated in Fig. 1 as assembled on the chassis 11. Such a shield may desirably be used for any coils such as the intermediate frequency transformers as shown, which are each secured to the top of a shield by a nut and stud 42 as

shown, the stud 42 being screwed through the insulating plate 44 on which the condensers are mounted, into the wooden post 45 on which the transformer is mounted. The shield 41 is preferably a drawn tube formed of a non-magnetic material of low resistance, such as that known commercially as "Eraydo." Shields of this type have been known heretofore and have been secured in place by means of lugs riveted to the wall of the shield. The present invention avoids the expense of providing and attaching such separate lugs and the difficulty which they have sometimes caused because of being improperly attached. According to the present invention, straps or projections 47 and 48 are stamped from the wall of the shield to positions offset from the plane of the wall of the shield in opposite directions as shown, thus forming a screw passage extending upwardly in the plane of the wall. The stamping die which forms these straps is shaped to form threads on the surfaces of straps 47 and 48 forming the screw passage. The shield 41 is then attached to the chassis frame 11 by pointed screws 50, extending up through the chassis frame 11 and screwed into the threads formed on the straps 47 and 48, as illustrated in Fig. 1.

It will be understood that the vibrating interrupter 12 is used in conjunction with a power transformer and a power filter which must also be thoroughly shielded, both from the rest of the set and from each other. A very effective and economical joint shield for this purpose is illustrated in Fig. 1 in which a shield 52 for the transformer is secured directly to the chassis frame 11 and a shield 53 for the filter is secured on top of the transformer shield 52. The shield 52 may be secured in place by lugs 54 and screws 55. The shield 53 is provided with downwardly extending lugs 57' with which it may be secured to the shield 52, as by screws 58 threaded to the wall of the shield 52.

It is also desirable that the chassis as a whole be shielded by the container. The container may comprise a box-like metallic structure 66 having an open end into which the chassis is slid. For the sake of simplicity, one end of the container has been broken away. To properly position the chassis with respect to the container and to take the strain off of connecting plugs not shown, a sturdy tapered stud 68 may be provided which may slip into a hole in a transverse member 69 fixed within the casing as illustrated. According to common practice the container 66 is grounded to the chassis frame. Also according to conventional practice, a removable cover 71 is provided for the open end of the container 66.

The proper grounding of this removable cover

has long been a troublesome problem, bearing in mind the desirability that the grounding should be inexpensive and should not interfere with the removal or replacement of the cover. This problem has been solved by providing one or preferably several spring contact strips 73 which are preferably spot welded to the top of the cover and are provided with spring contact fingers 74 which firmly engage the inside of the casing 66 when the cover 71 is pressed in place.

From the foregoing it is seen that there is provided a combination of various structural features which make possible the manufacture of a very compact and thoroughly shielded receiving set for automobiles and the like, at a relatively low expense, considering the quality of the set. Although of course many other features than those disclosed are necessary for the complete set, it is not necessary to disclose such features since the features which are disclosed have general application and can be used with a wide variety of electrical devices and circuits. In other words, any suitable circuits and electrical equipment may be provided for the structural features disclosed, in accordance with known principles of radio design.

Although but one embodiment of my invention has been herein shown and described, it is to be understood that the invention is not to be limited thereby, but is to be limited only by the scope of the appended claim.

I claim:

A walled metal shielding can open at the bottom for housing electrical apparatus on a radio receiver metal chassis with said can adapted for rigidly mounting on said receiver chassis in positive electrical and mechanical engagement therewith, said can having a screw-receiving hole in each of at least two different walls thereof extending upwardly from the open bottom and each hole formed by structure in each of said walls comprising a plurality of screw-engaging portions superimposed above one another in the respective can wall therefor and integral with the respective can wall, with said engaging portions in each respective can wall including one engaging portion extending in one direction away from and out of the plane of that wall and the next superimposed engaging portion extending in the other direction away from and out of the plane of that wall, with said engaging portions in each of said respective can walls each having screw threads on the inside face thereof to receive a screw for mounting said shielding can on a radio receiver chassis.

DONALD H. MITCHELL.