Oct. 18, 1955 M. B. ARISMAN ET AL 2,721,245

VARIABLE RESISTOR WITH SNAP-ON MOUNTING

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Fig. 1.

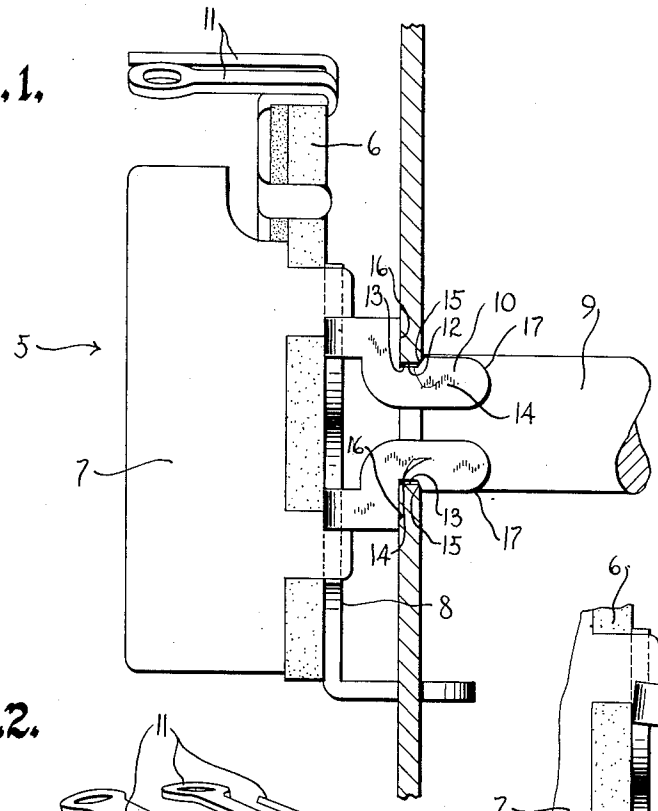


Fig. 3.

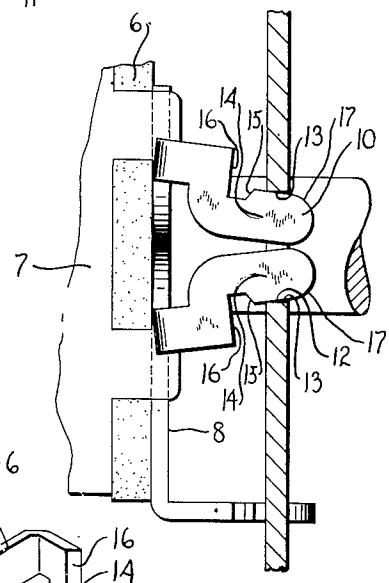
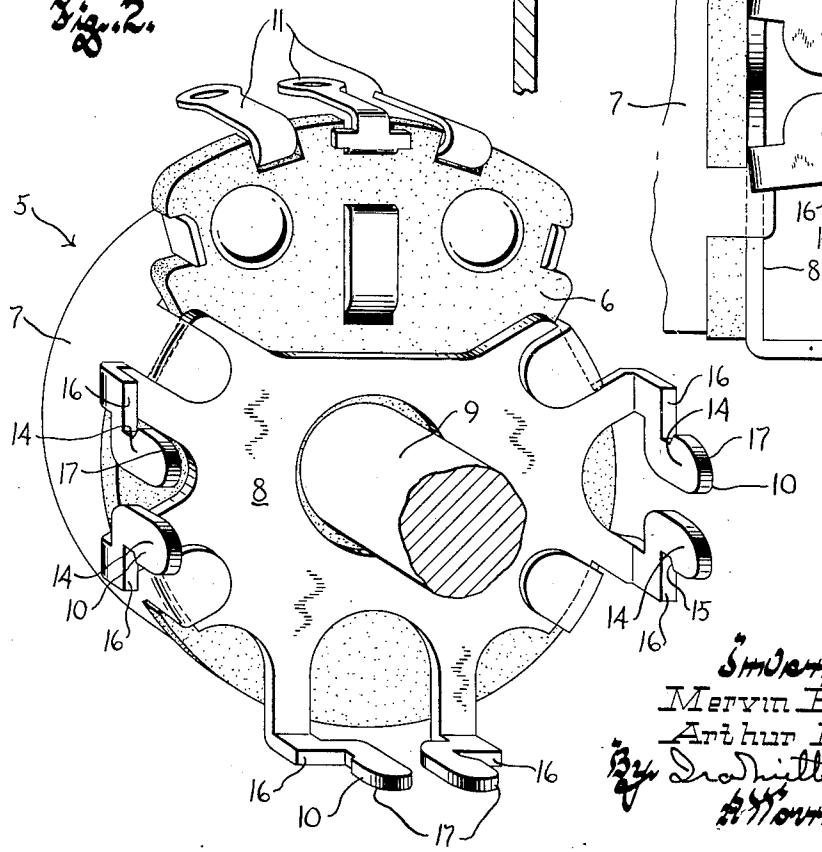


Fig. 2.



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Fig. 4.

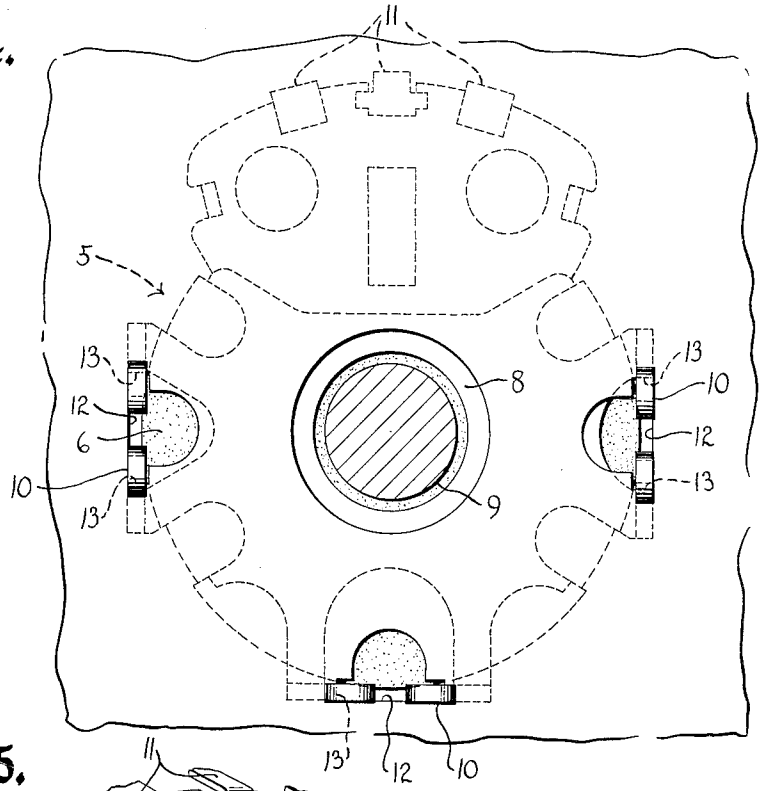
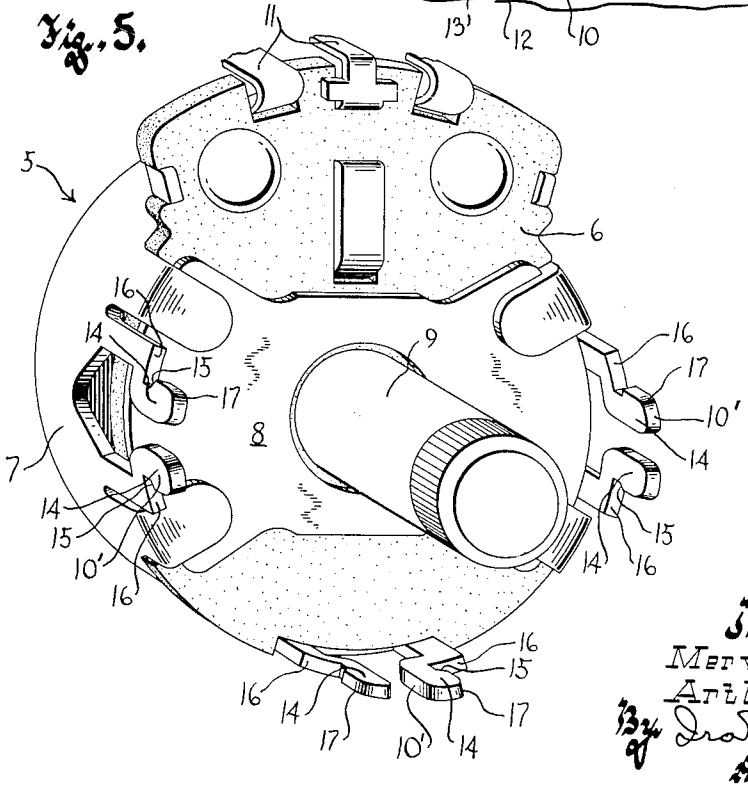


Fig. 5.



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VARIABLE RESISTOR WITH SNAP-ON MOUNTING

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2 Claims. (Cl. 201—55)

This invention relates to variable resistors of the type used in radio and television receivers and has as its general purpose to provide an improved manner of fastening such controls to a mounting panel.

Heretofore the fastening of variable resistors and similar components of radio and television receivers to the panels upon which they were mounted generally has been accomplished either by means of clamping nuts threaded on a bushing in which the operating shaft was journaled, or by fastening ears or tabs extended forwardly from the control through holes in the mounting panel, and either twisted or bent over the front face of the panel. All of these past expedients, however, entailed an operation in addition to the placement of the control upon the panel. Either a nut had to be applied and tightened, or the ears or tabs had to be twisted or bent over.

To obviate the need for such additional operations and thereby speed up the assembly of variable resistors and similar components of radio and television receivers with their mounting panels, it is the purpose and object of this invention to provide a manner of attaching or fastening a radio or television receiver control or other component to its panel which may be truly characterized as a snap-on mounting capable of being completed and rendered operative to firmly fasten the component onto the panel, by the simple act of pressing the component against the panel.

Another object of this invention is to apply this snap-on mounting concept to a variable resistor of type described in a way which does not increase the number of parts or seriously affect present tooling. To this end it a further object of this invention to provide a snap-on mounting especially adapted for fastening variable resistors and the like to their mounting panels in which the essential elements constitute one or more pairs of hooked fingers which engage behind the edges of slot-like openings in the mounting panel into which the fingers are inserted as the control is snapped into position, and which fingers are resilient so that they may be sprung as required to enable their insertion into slots which are shorter than the distance across the points of the hooks, to thus enable the hooks to be operatively engaged with the panel.

One of the most important considerations in the mounting of variable resistors and similar controls which are adjusted by rotation of a shaft, is that the control be securely held against even the slightest rotational freedom so that the torque imposed upon the control as the shaft is turned will not cause the control to shift. In recognition of this requirement, it is another object of this invention to provide a snap-on fastening which inherently secures the control against any possible rotational displacement.

With the above and other objects in view, which will appear as the description proceeds, this invention resides in the novel construction, combination and arrangement of parts substantially as hereinafter described and more particularly defined by the appended claims, it being understood that such changes in the precise embodiment of the herein disclosed invention may be made as come within the scope of the claims.

The accompanying drawings illustrate two complete examples of the physical embodiments of the invention constructed according to the best modes so far devised for the practical application of the principles thereof, and in which:

Figure 1 is a side view of a variable resistor embodying one adaptation of this invention and illustrating the resistor mounted on a panel;

Figure 2 is a perspective view of the front end of the variable resistor shown in Figure 1, but detached from the panel;

Figure 3 is a fragmentary side view of a portion of the resistor illustrating the manner in which the attaching fingers are sprung out of their normal positions during attachment of the resistor to its mounting panel;

Figure 4 is a front view of the mounting panel with the resistor positioned thereon, the resistor being illustrated in dotted lines behind the panel; and

Figure 5 is a perspective view similar to Figure 2 but illustrating a slightly modified embodiment of the invention.

Referring now particularly to the accompanying drawings, the numeral **5** designates generally a variable resistor of the type used in radio and television receivers, and which, as is customary, has its instrumentalities enclosed within a housing comprising a flat base **6** of insulating material, and a cup-shaped metal cover or shell **7** having the edge of its cylindrical side wall connected to the base. As is also customary, a ground plate **8** overlying the front face of the base is secured in position by the assembly of the cover with the base, and an operating shaft **9** passes through the base and the ground plate and projects forwardly therefrom.

The snap-on mounting comprises a plurality of pairs of hooked spring fingers **10**. In that form of the invention shown in Figures 1 through 4 inclusive, these hooked fingers are integral with and are bent forwardly from the ground plate **8**. In the modification shown in Figure 5 the corresponding spring fingers **10'** are an integral part of the side wall of the cover or shell **7** and project forwardly from its marginal edge. In each instance the fingers are spaced a substantial distance radially out from the axis of the control. The purpose and significance of this spacing will appear hereinafter.

To assure the desired stability in the mounting, it is preferable to employ three pairs or sets of spring fingers two of them diametrically opposite one another, and the third diametrically opposite the terminals **11** of the control.

The spring fingers of each pair are disposed in edgewise spaced relationship with their hooks **14** facing in opposite directions substantially perpendicular to a line extending from the axis of the control and passing between the adjacent back edges of the fingers. This disposition of the spring fingers enables them to be sprung toward each other but nevertheless gives them sufficient strength to strongly resist such deformation. Each pair of fingers snaps into a slot or opening **12** in the mounting panel as the control is applied thereto. The opposite ends or edges **13** of the slots **12** are spaced apart a distance less than the distance across the points of the hooks **14** so that in the attachment of the control to the panel the fingers must be sprung towards each other. This necessary lateral edgewise deflection of the spring fingers is facilitated by cam surfaces **17** on the outer side edges of the fingers, which of course cooperate with the adjacent ends or edges **13** of the slots or openings **12**, as shown in Figure 3.

Locating feet or shoulders **16** face the undersides **15'** of the hooks on the spring fingers to engage the adjacent side of the panel and space the control a definite distance therefrom. This distance is sufficient to provide adequate electrical clearance between the panel and the terminals of the control. The locating shoulders **16** are preferably

formed as a part of the spring fingers by giving the fingers the offset shape shown, and all of the locating shoulders lie on a common plane perpendicular to the axis of the control shaft when the fingers are in their normal free positions. Attention is directed to the fact that the shape of the fingers which produces the locating feet or shoulders **16**, leaves the fingers with substantially the same width for their entire length so that the fingers possess the desired resilience.

It is important to note that the undersides **15'** of the hooks are not parallel to the locating feet or shoulders **16**, but define a diverging angle with respect thereto. In other words, the undersides **15'** are closer to the plane of the shoulders **16** at their inner ends than at their outer ends. It is also important to observe that the average spacing between the undersides **15'** of the hooks and the locating shoulders **16** is substantially equal to the thickness of the panel. Hence, the wedging action of the inclined undersides **15'** draws the locating shoulders or feet **16** firmly against the adjacent side of the panel.

The significance of the locations of the fingers a substantial distance radially out from the axis of the control, and their paired arrangement as described, lies in the fact that this disposition of the fingers affords the greatest assurance against even the slightest free rotation of the control about its axis, or "chuck" as such looseness in the mounting is called in the industry. Any possible play which might permit "chuck" as the control is adjusted, is taken up by the spring tension under which the fingers are maintained by their wedge-like engagement with the opposite ends of their respective panel slots or openings.

From the foregoing description taken in connection with the accompanying drawings, it will be readily apparent that this invention provides an extremely simple, but highly effective, snap-on mounting, which is exceptionally well adapted for use with variable resistors, where it is important that the control be firmly held against even the slightest possible rotation about its axis, but of course may be employed to attach other components of radio and television receivers to their respective mounting panels.

What we claim as our invention is:

1. In a variable resistor of the type which is adjusted by rotation of a control shaft so that during adjustment of the resistor torque is imposed upon the resistor, said variable resistor having a housing with spaced end walls through one of which the control shaft passes, a snap-on fastening for the resistor comprising: a stamped metal plate secured to the housing in overlying relation to one of its end walls; diametrically opposite radially outwardly projecting arms on said plate, said arms being bifurcated to provide a pair of diverging fingers on each arm having their inner portions lying in the plane of said plate and their outer end portions bent up substantially perpendicularly to the plane of the plate and projecting therefrom, the bent-up portions of the fingers of each arm being disposed in edgewise spaced relation and being coplanar; outwardly facing locating shoulders on said bent-up portions of the fingers lying in a common plane parallel to and spaced a short distance outwardly of the plane of said plate; and hook means on the fingers outwardly of the shoulders to engage over the edges of holes in a panel upon insertion of the fingers into said holes, said hook means coacting with the panel to clamp the shoulders firmly against the panel and firmly hold the resistor against turning about the axis of its control shaft, engagement of the fingers into the holes in the panel to engage the hook means therewith entailing substantial flexure of the fingers of each pair toward one another.

2. In a variable resistor of the type which is adjusted by rotation of a control shaft so that during adjustment of the resistor torque is imposed upon the resistor, said variable resistor having a housing with spaced end walls through one of which the control shaft passes, a snap-on fastening for the resistor comprising: a stamped metal plate secured to the housing in overlying relation to one of its end walls; diametrically opposite radially outwardly projecting arms on said plate, said arms being bifurcated to provide a pair of diverging fingers on each arm having their inner portions lying in the plane of said plate and their outer end portions bent up substantially perpendicularly to the plane of the plate and projecting therefrom the bent up portions of the fingers on each arm being disposed in edgewise spaced relation and being coplanar, and having an edgewise offset stepped shape with the remote edges of their inner portions which lie adjacent to said plate spaced farther apart than the remote edges of their outer end portions, the steps formed by said offset providing widely spaced outwardly facing locating shoulders lying in a common plane parallel to but spaced a short distance outwardly of said plate to seat upon a panel upon which the resistor is to be mounted, the outer end portions of said fingers having notches in their remote edges directly adjacent to the locating shoulders, and the edges of said notches which face towards the shoulders being inclined at a diverging angle to the shoulders so that upon projection of the fingers through slots in a panel which is slightly thicker than the minimum distance between the locating shoulders and the opposite inclined edges of the notches, said shoulders are drawn firmly against the panel and the resistor is firmly held against turning about the axis of its control shaft, providing the slots are no shorter than the normal free distance from the bottom of the notch in one finger to the bottom of the notch in the other finger.

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