April 16, 1940. M. J. ARVIN 2,197,140

CONTROL SHAFT

Filed Feb. 9, 1937

Fig. 1

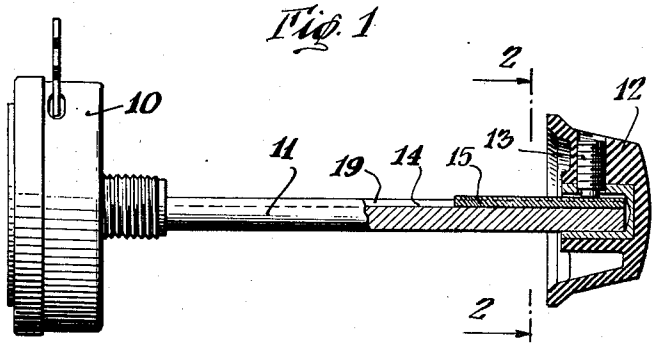


Fig. 2

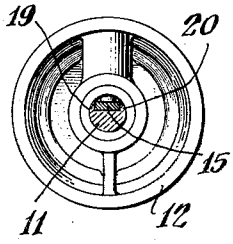


Fig. 3

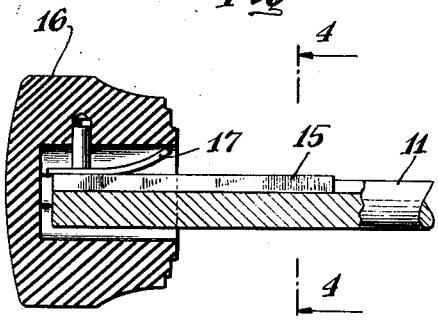


Fig. 4

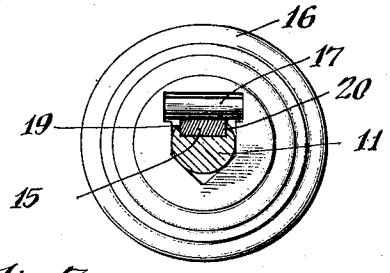


Fig. 5

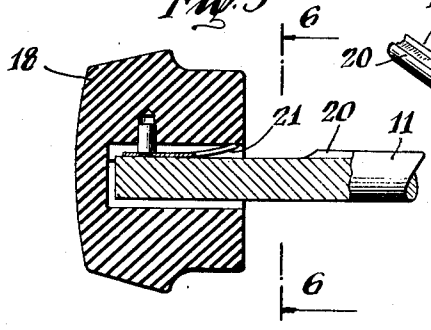


Fig. 7

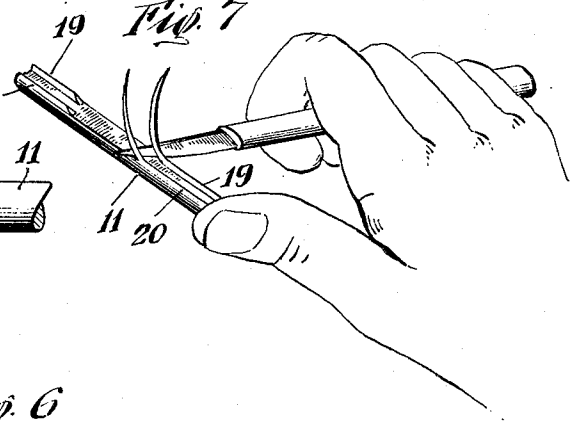
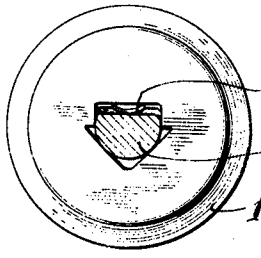


Fig. 6



INVENTOR

Marion J. Arvin

BY

ATTORNEY

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CONTROL SHAFT

Marion J. Arvin, Indianapolis, Ind., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind., a corporation of Delaware

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2 Claims. (Cl. 64—1)

This invention relates to control shafts for electrical devices.

An object of the invention is to improve the control shafts for electrical devices.

Another object is to provide a control shaft which can be adapted to use with a variety of control knobs.

Other objects of the invention will be apparent from the following description and accompanying drawing taken in connection with the appended claims.

The invention comprises the features of construction, combination of elements, arrangement of parts, and methods of manufacture and operation referred to above or which will be brought out and exemplified in the disclosure hereinafter set forth, including the illustrations in the drawing.

In the drawing:

Figure 1 is a side view partly in section of an electrical device and the control shaft and control knob therefor;

Figure 2 is a section on the line 2—2 of Figure 1;

Figure 3 is a section of a portion of the control shaft with a modified type of knob attached thereto;

Figure 4 is a section on the line 4—4 of Figure 3;

Figure 5 is a section of the control shaft with another form of knob attached thereto;

Figure 6 is a section on the line 6—6 of Figure 5; and

Figure 7 is a view illustrating the method of adapting the shaft for use with the knob of Figure 5.

Electrical devices, such as those used in radio sets and the like, including volume controls, variable condensers, switches and the like are usually provided with control knobs connected to the device by a rotatable control shaft for actuating the device. Thus by manual rotation of the knob the shaft is rotated and this in turn actuates the moving parts of the electrical devices.

The knobs commonly used for actuating such devices are at present furnished in several types having different means for attachment to the control shaft. Thus some knobs are equipped with a set screw for securing them to the shaft and others are provided with a spring clip.

In shafts heretofore used it has been customary for the manufacturers to flatten one side of the shaft to afford a purchase area from the set screw or spring of the knob. However, different styles of knobs require different degrees of flattening. For example, one knob used at present using a ¼ inch shaft requires a flattened side $\frac{1}{32}$ of an inch below the normal rounded surface of the shaft while another type of knob requires a $\frac{3}{32}$ of an inch flattening. Heretofore it has been necessary either to obtain a knob adapted for the particular flattening which the manufacturer has provided on the shaft or to laboriously file down the shaft to the proper depth for the desired knob. Obviously for purposes of apperance it is not always possible to use the different styles of knobs interchangeably.

According to the present invention a control shaft is provided which is more readily adaptable to the various styles of knobs and hence can be used by the parts manufacturer on all the devices produced. Then the shaft can readily and conveniently be adapted to any style of knob desired.

While a preferred embodiment of the invention is described herein, it is contemplated that considerable variation may be made in the method of procedure and the construction of parts without departing from the spirit of the invention. In the following description and in the claims, parts will be identified by specific names for convenience, but they are intended to be as generic in their application to similar parts as the art will permit.

Referring to the drawing, Figure 1 shows a variable electrical device comprising a radio volume control 10 having a control shaft 11 embodying features of the present invention and a control knob 12 secured to the control shaft by a set screw 13.

Shaft 11 is formed of a cylindrical piece of relatively soft metal such as aluminum or the like which has a flat bottomed slot 14 milled therein longitudinally to the shaft. The bottom of slot 14 may, for example, be approximately $\frac{3}{32}$ of an inch below the normal rounded surface of the shaft. The slot is of such width as to leave a pair of narrow walls or ridges 19 and 20 each of whose faces corresponds to the outer surface of the shaft and to a side of slot 14.

Where it is desired to use knob 12 with shaft 11 as shown in Figures 1 and 2, this knob ordinarily requires a $\frac{1}{32}$ of an inch flat on the shaft. The shaft 11 is adapted for use with this knob by inserting a short rectangular strip of metal 15 in slot 14. Metal piece 15 is of such width as to fit readily into slot 14 and of such thickness as to provide a top surface of a height corresponding to a shaft with a $\frac{1}{32}$ inch flat. Knob 12 can then be slipped over the end of the shaft as illustrated

and screw 13 tightened against the top surface of metal insert 15.

Figures 3 and 4 illustrate the use of another form of knob 16 having a spring clip 17 for attachment to the shaft. If knob 16 also requires a $\frac{3}{32}$ of an inch flat the shaft 11 can be adapted for use with it by the insertion of metal insert 15 in the same manner as before. In this case spring 17 rests against the flat top face of insert 15.

Figures 5 and 6 illustrate how the shaft 11 can be adapted for use with another form of knob 18. Knob 18 is a type of knob requiring a $\frac{3}{32}$ inch flat on the shaft. In order to adapt shaft 11 for use with knob 18, therefore, the two side walls 19 and 20 are scraped or whittled off in any desired manner, for example, as illustrated in Figure 7. This leaves exposed at the end of shaft 11 a flat portion corresponding to the depth of slot 14, in other words, a $\frac{3}{32}$ inch flat. It is then possible to slip knob 18 on to shaft 11 and spring clip 21 of the knob will then rest on the flat face thus provided. It will thus be seen that applicant has provided a shaft which is readily adaptable to the various types of knobs used without the necessity of laborious filing or other difficult or time consuming operations or without the necessity of providing special shafts for each type of knob. This is a decidedly great convenience.

It will be obvious that the shaft illustrated can be adapted for use with other types of knobs and that the dimensions given are merely for the purpose of illustration and that these dimensions can be varied as required. It will be noted that the shaft 11 is shown in different sizes in the various figures for purposes of better illustration. It is intended, however, that the same shaft be considered as represented in all the views.

Another advantage of the shaft illustrated resides in the ease with which it can be broken to the length desired. Heretofore it has been necessary with round or only partially flattened shafts to cut them to length with a saw. With the present shaft it is only necessary to notch the shaft at the point where a break is desired and then to break it.

While the shaft is here illustrated as applied to a radio volume control it will be obvious that it is also adapted for use with a variety of other electrical devices such as variable condensers and electric switches.

While the present invention as to its objects and advantages, has been described herein as carried out in specific embodiments thereof, it is not desired to be limited thereby but it is intended to cover the invention broadly within the spirit and scope of the appended claims.

What is claimed is:

1. An adaptable control shaft for actuating variable electric devices of the type comprising radio set volume controls, variable condensers, switches and the like, said shaft comprising a cylindrical shaft of soft metal formed with a longitudinal slot along one side thereof, said slot being defined by a pair of narrow ridges defining said slot between them, whereby said shaft may be readily adapted for use with a plurality of types of control knobs by insertion of a block in said slot or by whittling off said ridges at the point of intended engagement with the knob.

2. An adaptable control shaft for actuating variable electric devices of the type comprising radio set volume controls and the like, said shaft being adaptable to a plurality of types of control knobs and comprising an elongated cylindrical body of soft metal having a longitudinal slot along one side thereof, said slot being defined by a pair of narrow ridges defining said slot between them, said ridges and slot extending to the knob end of said shaft, whereby said shaft end may be readily adapted for use with any of said types of knobs by insertion of an adapter block in said slot or by whittling away said ridges as required.

MARION J. ARVIN.