

Aug. 11, 1959

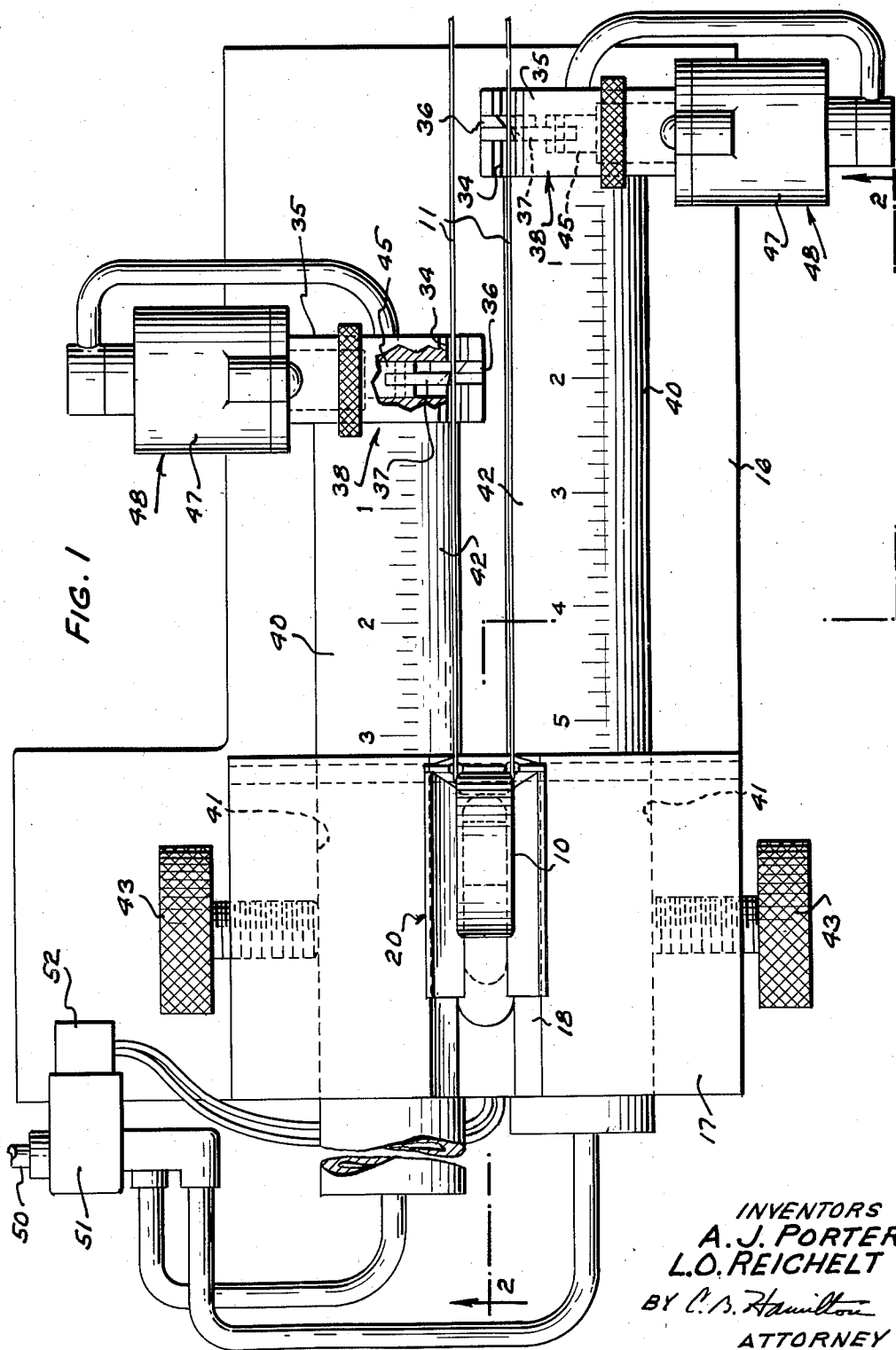
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DEVICE FOR CUTTING LEADS OF ELECTRICAL COMPONENTS

Filed April 29, 1957

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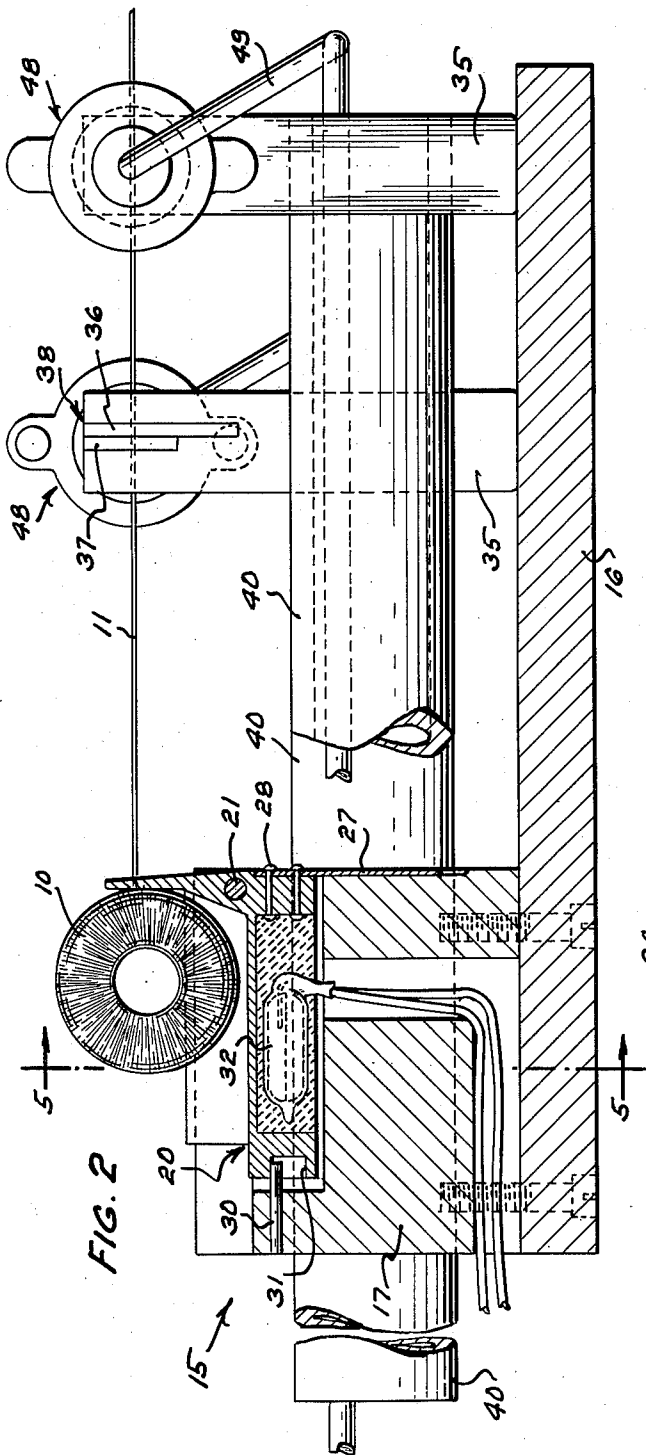


FIG. 2

FIG. 3

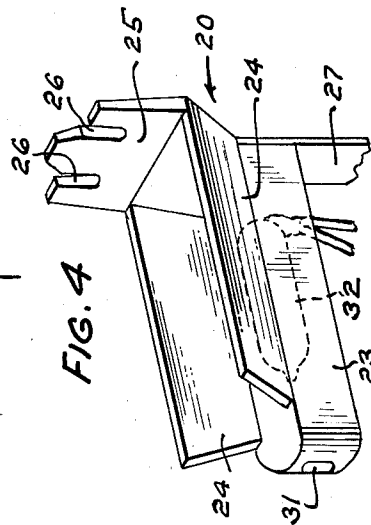
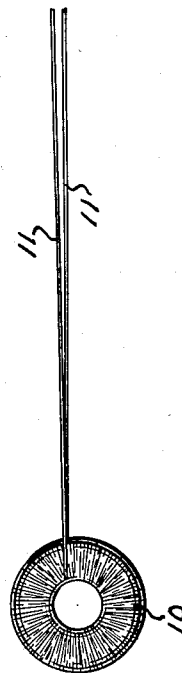


FIG. 4

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DEVICE FOR CUTTING LEADS OF ELECTRICAL COMPONENTS

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1 Claim. (Cl. 164—47)

This invention relates to a device for cutting the leads of toroidal coils to predetermined lengths.

An object of the present invention is to provide a simple and effective device for cutting the leads of electrical coils and other components to predetermined lengths.

A device illustrating certain features of the invention may include a cradle which is pivotally mounted on a support for holding a toroidal coil, and a pair of cutters carried on arms which are individually adjustably mounted on the support to vary the distance between the cutters and the cradle in accordance with the length of coil leads desired. The cutters are operated by fluid actuators mounted on the arms and connected to a compressed air line through a solenoid operated valve which is controlled by a mercury switch mounted in the cradle. Graduations on the arms facilitate adjusting the cutters to the proper positions after which a toroidal coil is placed in the cradle and the leads are drawn taut and placed in the cutters and then pulled to tilt the cradle and trip the switch to effect the actuation of the cutters and the shearing of the coil leads.

Other objects and advantages of the invention will become apparent by reference to the following detailed description and the accompanying drawings, illustrating a preferred embodiment thereof, in which

Fig. 1 is a plan view of a device for cutting the leads of toroidal coils;

Fig. 2 is a vertical longitudinal sectional view through the device taken along line 2—2 of Fig. 1;

Fig. 3 is a view of a toroidal coil, the leads of which are to be cut to a predetermined length by the present device;

Fig. 4 is a perspective view of a cradle of the device;

Fig. 5 is a vertical cross-sectional view of the device taken along line 5—5 of Fig. 2; and

Fig. 6 is an end view of the device showing the cutters thereof.

Referring to Fig. 3 of the drawings, the reference numeral 10 indicates a toroidal coil having a pair of leads 11 which may be cut individually to predetermined lengths in the present lead cutting device 15 prior to the coil 10 being assembled into electrical apparatus. The device 15 comprises a base 16 having a block or head 17 thereon which has a recess 18 for receiving a cradle or coil holder 20. The cradle is pivotally supported on a pin 21 and comprises a hollow body portion 23 with diverging side walls or wings 24 and an end wall 25 extending upwardly therefrom. A toroidal coil 10 is supported in the cradle as shown in Fig. 2 with the leads 11 extending substantially parallel therefrom through a pair of notches 26 in the end wall. A leaf spring 27 secured to the cradle by rivets 28 extends downwardly into engagement with the head 17 and urges the cradle in a counterclockwise direction about the pivot pin 21. Movement of the cradle about the pin 21 is limited by a pin 30 which is secured to the head

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17 and has one end thereof projecting into a slot or recess 31 in the end of the body portion 23 of the cradle. A mercury switch 32 is secured in the hollow body portion 23 of the cradle with suitable casting resins or molding compounds and the switch and the cradle are yieldably maintained in a normal substantially horizontal position in which the switch is open. The switch 32 is actuated to closed position in response to upward pivotal movement of the cradle.

10 Portions of the leads 11 extending from a toroidal coil 10 in the cradle 20 are placed in grooves 34 in a pair of supporting members or blocks 35 and between stationary and movable shear blades 36 and 37, respectively, of a pair of lead cutters 38 mounted on the supporting members 35. These members 35 are supported slidably on the base 16 and are secured to a pair of arms 40 in the form of tubes which extend through apertures 41 in the head 17 and are adjustable horizontally to vary the distance between the cutters 38 and the cradle 20. The arms 40 have graduations 42 thereon which cooperate with the head to indicate the distance between the cutters 38 and cradle 20 and also the length of the coil leads 11 after being cut in the device. After the cutters 38 are adjusted to the desired positions, the arms 40 are locked to the head 16 by lock screws 43.

25 The movable shear blades 37 of the cutters 38 (Fig. 6) are carried by piston rods 45 of pistons reciprocable in cylinders 47 to fluid actuators 48 mounted on the supporting blocks 35 for operating the cutters. The fluid actuators are air actuated in one direction and spring returned and have flexible tubes 49 connected to a compressed air supply line 50 through a valve 51 (Fig. 1). The valve is electrically actuated by a solenoid 52 which is connected to a source of power (not shown) and controlled by the mercury switch 32.

35 When it is desired to cut the leads 11 of toroidal coils 10 to predetermined lengths, the cutters 38 are adjusted relative to the head 16 to their proper positions as indicated by the graduations 42 on the arms 40 thereof, and the lock screws 43 are tightened to lock the cutters 38 in position. A coil 10 is then placed in the cradle 20 and the leads 11 are guided through the notches 36 therein and are positioned in the grooves 34 of the blocks 35 and between the blades 36, 37 of the cutters 38. The ends of the leads 11 beyond the cutters 38 are pulled by the operator to move the coil 10 to the right as viewed in Fig. 1 and rock the cradle 20 upwardly about the pivot 21. This tilts the mercury switch 32 to closed position to effect the shifting of the valve 51 and the actuation of the cutters 38 to shear the leads 11 to the desired length. As soon as the ends of the leads 11 have been cut off, the cradle 20 drops to its normal position and actuates the switch 32 to effect the shutting off of the air to the fluid actuators 48 and the return of the cutters 38 to their normal open positions.

60 The cradle 20 may be shaped to hold various types of coils or other electrical components having leads which may be cut to predetermined lengths in the present device. The control switch 32 may also take other forms than the mercury switch shown herein for actuating the control circuit in response to movement of the cradle to its different positions.

65 It is to be understood that the above-described arrangements are simply illustrative of the application of the principles of this invention. Numerous other arrangements may be readily devised by those skilled in the art which will embody the principles of the invention and fall within the spirit and scope thereof.

70 What is claimed is:

In a device for cutting coil leads to predetermined

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lengths, a base having a head, a cradle for supporting a coil pivotally mounted on the head for limited movement from a normal first position to a second position, a plurality of cutters having shear blades for severing the coil leads, a plurality of supporting members, one for each cutter mounted slidably on the base for supporting the cutters at various distances from the cradles and having grooves therein for supporting the coil leads between the shear blades of the cutters, a plurality of fluid actuators, one for each lead cutter, mounted on the supporting members for actuating the cutters, arms extending between the supporting members and the head for guiding the supporting members for movement toward and from the head, graduations on the arms for

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indicating the lengths of the leads between the cradles and the cutters, and control means including a switch operable in response to movement of the cradle to its shearing position for rendering the actuators operative to actuate the cutters and shear the coil leads.

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