June 25, 1968 O. TAMBURR 3,389,629

MULTIPLE LEAD CUTTER

Filed Aug. 30, 1966

FIG. 1

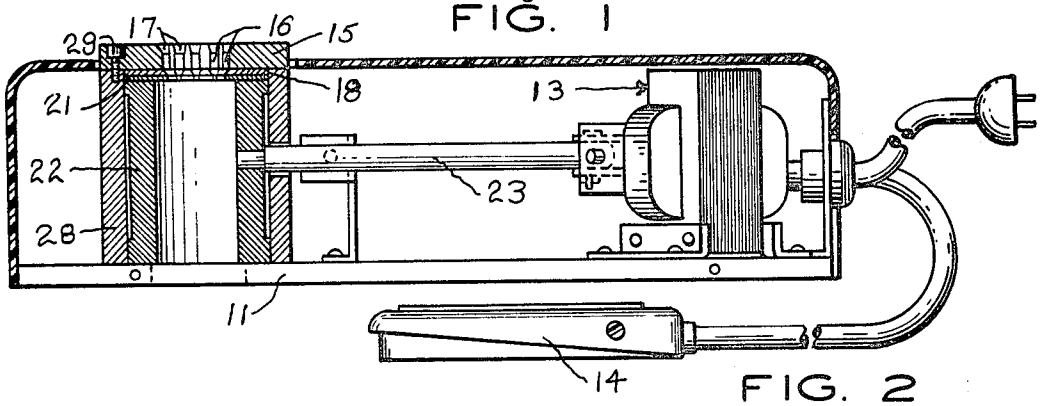


FIG. 2

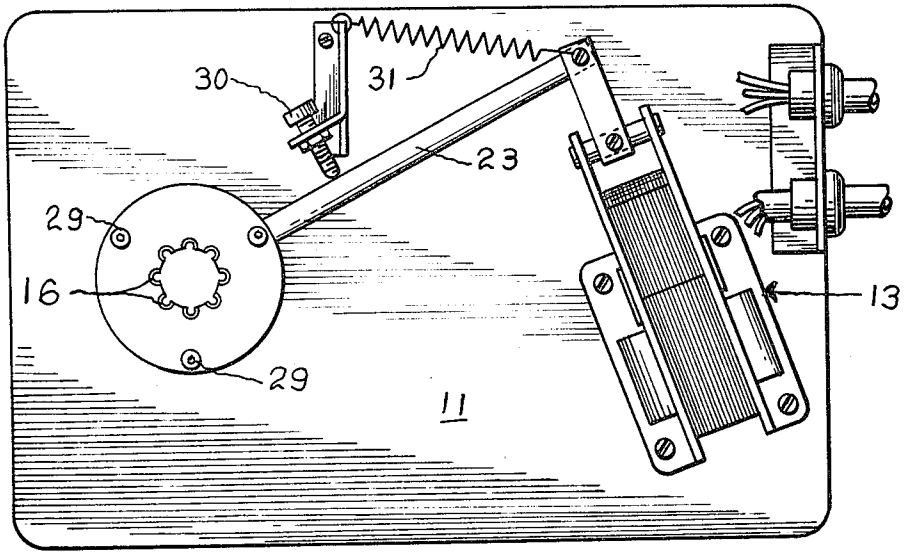


FIG. 4

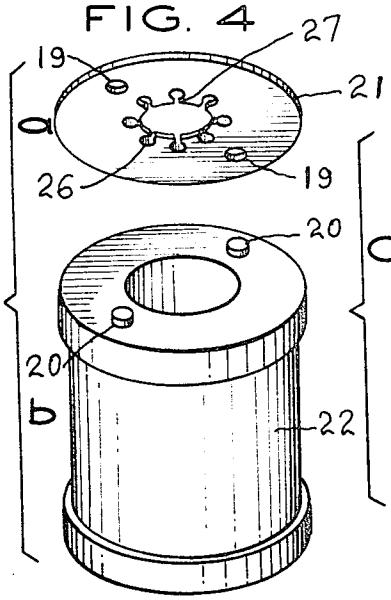


FIG. 3

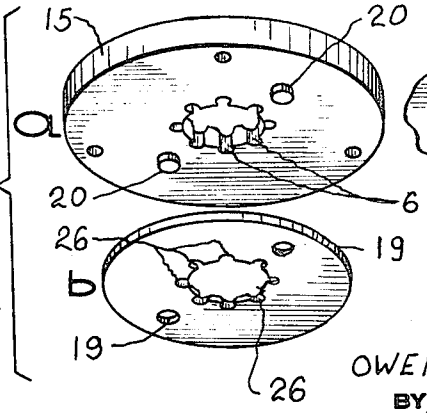
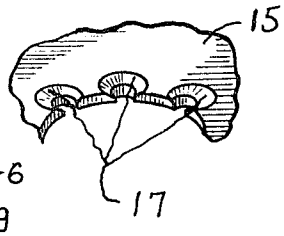


FIG. 5



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MULTIPLE LEAD CUTTER

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This invention relates generally to devices for cutting a plurality of electrically conductive leads and, specifically, to devices for cutting contact pins of a vacuum tube base to a uniform length, so that they may be readily and conveniently inserted into a tube socket.

It is an object of this invention to provide a lead cutter, which will cut to a uniform length, a plurality of leads and which is quick and automatic in its operation.

It is another object of the invention to provide a multiple lead cutter which will not deform the leads from a vacuum tube or similar article, insuring them to be a uniform length.

It is a still further object of this invention to provide a multiple lead cutter, which is easy for the unskilled to use.

These objects and advantages, as well as other objects and advantages, may be attained by the device shown in the drawings in which

FIGURE 1 is a vertical sectional view of a multiple lead cutter illustrating the invention;

FIGURE 2 is a top plan view thereof with the housing removed;

FIGURE 3 is a perspective view of the upper cutter and guide;

FIGURE 4 is a perspective view of the lower cutter and rotatable support therefor; and

FIGURE 5 is a perspective partial view of the cutter.

Vacuum tubes or similar articles as produced, frequently have leads extending from their base which are of unequal lengths, and it is necessary for them to be cut to a uniform length, so that the vacuum tube may be readily applied to a socket. When this cutting procedure is performed manually, the leads are sometimes unevenly cut and are deformed, so that vacuum tube will not readily fit a socket. When the operation is performed by a mechanical device, the leads are frequently deformed in the process of shearing them off to a uniform length, and must be straightened before the vacuum tube can be applied to a socket. Such automatic devices which perform the shearing function are difficult to use, in that the vacuum tube base leads are not readily applied to the cutters, and after being applied carelessly and even diligently, the leads are deflected, either in insertion or in shearing.

The present invention is designed to simply and easily accomplish the shearing of multiple pins simultaneously to a uniform length, without the risk of deforming the pins, and permitting easy insertion of the vacuum tube base into the cutter.

Referring now to the drawings in detail, the multiple lead cutter provides a base **11** and a cover or housing **12** for the base. Positioned on the base is a solenoid **13**. A power supply to the solenoid is provided with a treadle-type electric switch **14** so that the application of the foot to the treadle **14** will operate the solenoid **13**. In lieu of a solenoid, an air cylinder or other driving means may be supplied with a suitable pedal valve to manipulate the apparatus. A stationary guide **15** protrudes from a circular orifice in the top of the housing **12**. The guide **15** has a central, circular orifice, with a plurality of semicircular pin sockets **16**, positioned in spaced relation to each other to receive base leads or contact pins extending from the base of a vacuum tube so that they may be sheared to equal length. The sockets **16** have a flared, introductory guide surface **17**, to facilitate the insertion

of the pins or leads into the sockets **16**. The height of the guide **15**, with the upper cutter later referred to, determines the length to which the pins are cut.

Positioned immediately below the stationary guide **15** is a stationary cutter **18**. The upper cutter **18** has a pair of holes **19**, to engage a pair of pins or keys **20** on the bottom of the guide **15**, so as to keep the upper cutter **18** from rotational movement.

Immediately below the upper cutter **18**, a lower cutter **21** is located in slidable, rotatable relation to the stationary upper cutter **18**. The movement of the lower cutter **21** with relation to the stationary upper cutter **18** shears the pins. The lower cutter **21** rests on a rotatable support **22**; the support rests on the base **11**, and has a base which receives an arm or link **23**, connected to the solenoid **13**. The lower rotatable cutter has a pair of holes **19** which receive a pair of pins or keys **20** by which movement of the support **22** rotates the lower cutter **21**. Both cutters **18**, **21** are made of hardened stock to enable them to shear pins. The cutters **18**, **21** are each provided with a central orifice around which are radially arranged, semi-circular pin openings **26**. The openings **26** in the lower cutter **21** are precisely dimensioned to receive pins which are to be sheared-off at a particular length. The openings **26** in the upper cutter **18** are slightly larger than those openings **26** in the lower cutter **21**.

The openings **26** in the rotatable die **21** have a slot **27** with vertically radial walls extending out into the central aperture of the lower cutter **21**. The walls of this radial slot **27** are of decreasing width, as they extend toward the central aperture of the lower cutter **21**. That is to say, these walls are not parallel but taper as they extend inwardly toward the axis of the rotation of the cutter **21**. It has been found that this construction tends to prevent the pins from deforming or being deflected under the shearing stress when the rotatable die is operated. Thereby, the pins remain axially parallel with each other and with the central axis of the cutter **21**, and are not deflected or deformed during the shearing operation.

When a vacuum tube base has its leads inserted through the pin sockets **16**, into the openings **26** of the stationary cutter **18** they are guided by the flared portions **17** into these pin sockets **16** and they extend beyond the stationary cutter **18** into the openings **26** in the rotatable cutter **21**. The leads are closely held in the openings **26**. The rotatable cutter **21** is then rotated in such a manner that its central axis remains coaxial with the central axis of the stationary die. The shearing force exerted by the rotatable cutter **21** shears off the leads or pins at the point where the openings **26** in the stationary cutter **18** intersect with the openings **26** in the rotatable cutter **21**. The construction devised prevents the deflection or deformation of the pin sockets, and produces a neat sheared end. The cutters **18**, **21** rest on top of each other in intimate engagament with each other as they rotate to cut. When soft pins are being cut, the construction prevents the soft pins from being deflected outside of the cutting area. A sleeve **28** surrounds the support **22**, is attached to the base **11**, and holds the stationary guide immovable by the bolts **24**.

Registration of the openings **26** in the cutters **18**, **21** is controlled by the screw **30**. The screw positions the link **23** for proper registration of the openings **26** with each other. The spring **31** normally urges the link **23** to accomplish this after each action of the solenoid **13**. The sleeve **28** has an aperture to admit the link **23** for engagement with the support **22**, so that the support **22** can be reciprocated, thereby driving the lower cutter **21**.

The foregoing description is merely intended to illustrate an embodiment of the invention. The component parts have been shown and described. They each may have substitutes which may perform a substantially similar

function; such substitutes may be known as proper substitutes for the said components and may have actually been known or invented before the present invention; these substitutes are contemplated as being within the scope of the appended claims, although they are not specifically catalogued herein.

What is claimed:

1. A multiple lead cutter comprising

(a) an upper and a lower cutter disposed in juxtaposition,

(b) a plurality of openings in the upper cutter intersecting with a central opening in the cutter,

(c) a plurality of openings in the lower cutter in general registration with the openings in the upper cutter,

(d) the openings in the lower cutter communicating with generally radial slots intersecting with a central opening in the cutter, and the slots tapering toward the central opening.

2. A multiple lead cutter comprising the device according to claim 1 in which the upper cutter remains immovable with respect to the lower cutter.

3. A multiple lead cutter comprising the device according to claim 1 in which a stationary guide superposes the upper cutter and is connected thereto; and the stationary guide has a plurality of flared introductory guide surfaces and openings in registration with the openings in the upper cutter.

4. A multiple lead cutter comprising the device according to claim 1 and a generally tubular support for the lower cutter, a generally tubular sleeve surrounding the tubular support.

5. A multiple cutter comprising a device according to claim 4 and a driving means connected to the tubular support for the lower cutter, whereby the lower cutter is rotated with respect to the upper stationary cutter.

6. A multiple cutter comprising the device according to claim 4, a spring connected to the driving means normally urging the tubular support to position the lower cutter with its openings in registration with the openings in the upper cutter.

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