

June 23, 1959

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ELECTRODE BLANKS

2,891,304

Filed June 14, 1956

Fig. 1.

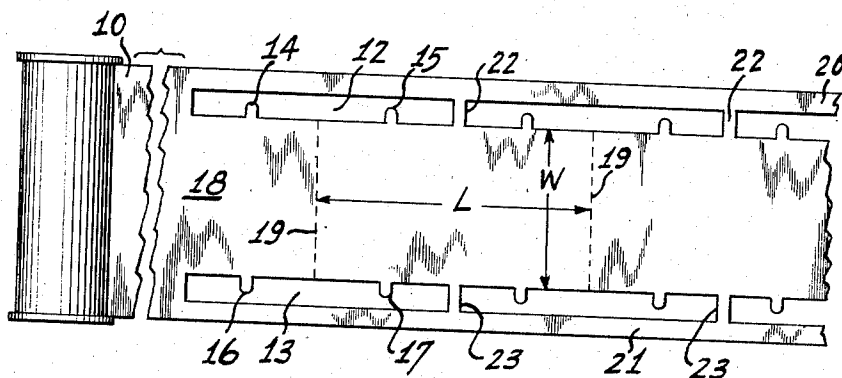
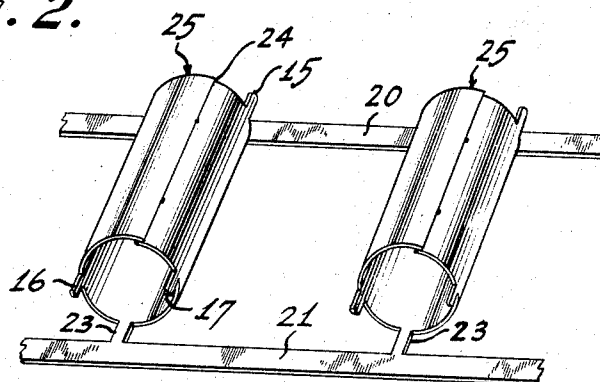


Fig. 2.



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ELECTRODE BLANKS

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Application June 14, 1956, Serial No. 591,382

1 Claim. (Cl. 29—193.5)

This invention relates to electrodes, such for example as plate electrodes or cage electrodes for electron tubes and the like.

A principal object of the invention is to provide a novel form of metal blank which facilitates the processing and manufacture of electrodes for electric devices, especially for use in electron tubes and the like.

Another object is to provide a method of forming a metal strip into a specially cut blank whereby the handling, processing and formation of electrodes is greatly facilitated.

A feature of the invention relates to a metal strip blank which is cut or punched to form a main central body section which is to constitute a finished electrode, and to which body section there is integrally attached on opposite margins, linear strips which may constitute guides for locating or orienting the strips during succeeding electrode processing or shaping operations.

Another feature relates to a novel continuous strip blank which is specially cut or punched to provide a matrix specially adapted to the formation of tubular electrodes in a continuous automatic electrode-forming or processing machine.

Other features and advantages will appear as the ensuing descriptions proceed.

In the drawing which shows, by way of example, one preferred embodiment,

Fig. 1 is a plan view of a metal strip prepared according to the invention;

Fig. 2 is an isometric perspective view of a succeeding step in the process of using the blank of Fig. 1 to form tubular metal plate or cage electrodes.

Various forms of machines have been designed to form tubular plate or cage electrodes starting with a flat metal strip. In one such arrangement the strip is severed into separate blanks which are shaped to form individual electrodes which are then passed as individually formed electrodes through one or more shaping or processing stages of the automatic machinery. One of the problems encountered in such conventional machines is that of insuring proper and uniform orientation of the blanks and of the formed electrodes, to the forming dies or to other processing elements of the machine. This has usually required special orienting mechanisms to make sure that each blank or each separately formed electrode is in the correct orientation at the respective processing points in the machine.

In accordance with the present invention, the above-noted difficulties and other defects are overcome by fabricating the blank as a single continuous length of flat metal stock which is integrally formed with its own orienting guides so that the blank can be subjected to the forming or shaping dies and to other processing elements with the assurance of absolute uniformity between large batches of the finally formed electrodes.

As will be seen in Fig. 1 of the drawing, a continuous length of flat metal strip stock 10 can be unreeled or supplied from a roll 11. The metal strip is fed through

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any well known metal punch or die cutting device (not shown) which cuts out of the strip 10 along opposite margins thereof elongated windows 12, 13. Each window is also cut with a pair of spaced lugs 14, 15, 16, 17 which are to form the eventual anchoring lugs for the finished electrode.

Either in a subsequent stage of the same machine that cuts out the windows 12, 13 or in a separate machine to which the punched strip is fed, the central or main body portion 18 is severed along the dotted line 19, but without severing the margins 20, 21. The severance line 19 is preferably located midway between the adjacent lugs 14 and 15 to constitute an individual electrode-forming matrix of length L and width W. Thus, it will be seen that the margins 20, 21 are integrally joined to the main or central body section 18 by the ribs 22, 23. Therefore, the body section 18 upon which the various succeeding shaping or other processing operations are to be performed is always in fixed parallelism with the integral margins 20, 21. Therefore, these margins 20, 21 can be used as linear guides for guiding the punched matrix in the proper orientation through the successive stages of the automatic machinery.

At one stage in this machinery the transversely severed matrix of length L and width W is bent around a suitable arbor or shaping tool to form the matrix into a substantially tubular or cylindrical shape, as indicated in Fig. 2, wherein the integral anchoring lugs 14, 15 are diametrically opposite to each other as are the anchoring lugs 16, 17. The edges of the matrix can then be joined either by seam welding or in any other well known manner along the line 24, thus constituting a complete cylindrical or tubular electrode unit 25 which even at this state of formation is integrally joined by the ribs 22, 23 to the integral marginal guides 20, 21. This assembly of the guides 20, 21 and the electrodes 25 can then be fed through any suitable processing machine, such as a heat treatment machine, carbonizing machine, or the like, and here again the guides 20, 21 preserve the proper orientation of the electrodes 25 in their passage through such devices.

After the electrodes have been properly processed they can be severed in any suitable way from the marginal strips 20, 21 by cutting the ribs 22, 23 at any convenient point.

It will be understood, of course, that the invention is not limited to the shaping of the severed matrices into any particular tubular shape, and the formation of these matrices into cylindrical form is merely given by way of example. Furthermore, while each matrix is formed with a set of four anchoring lugs 14, 15, 16, 17 it will be understood that they may be formed with a greater or less number of such lugs as may be required.

It will be understood also that the punching and formation of the metal strip and the formation of the severed matrices while integrally attached to their lateral guides 20, 21 can be effected manually, if necessary.

Various changes and modifications can be made in the disclosed embodiment consonant with the scope of the appended claim.

What is claimed is:

A blank for the manufacture of electron tubes comprising an elongated sheet metal strip of predetermined length; said strip including a pair of marginal guide sections defining opposite side edges of said strip, an integral main body section intermediate said guide sections and having a length substantially equal to said predetermined length, whereby said body section contributes to the tensile strength of said strip, two groups of severable ribs integral with said body section, one of said groups also being integral with one of said guide sections and the other of said groups also being integral with the

other of said guide sections, said ribs being equidistantly spaced along said strip, said guide sections, body section and ribs defining a plurality of elongated openings through said strip and extending longitudinally thereof, and a plurality of anchoring tabs integral with said body portion and extending only partly across said openings,

whereby said tabs are protected from deformation during further handling of said blank.

References Cited in the file of this patent

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