Aug. 4, 1936. R. G. RICHARDS 2,049,867

RADIO TUBE LABEL

Filed June 7, 1935

Fig. 1

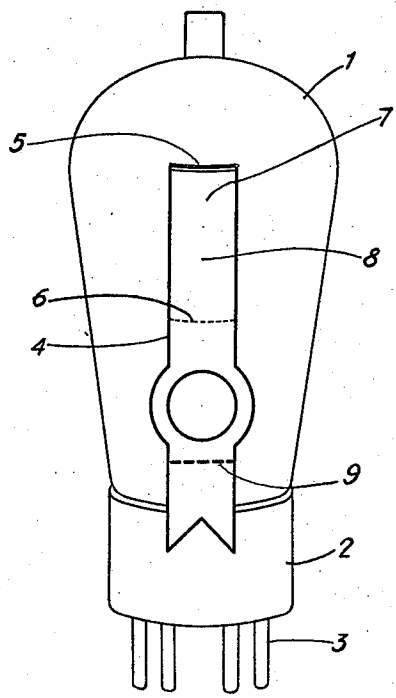


Fig. 3

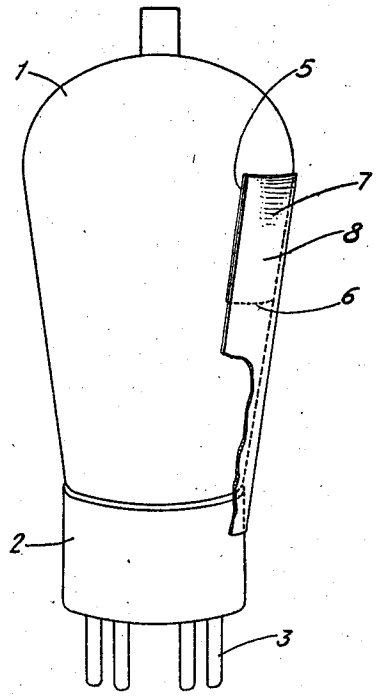
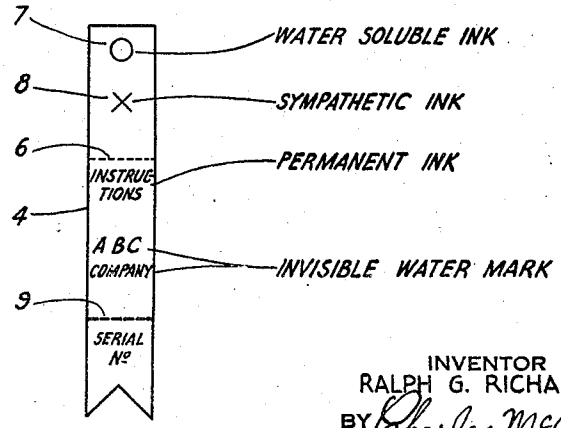


Fig. 2



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Patented Aug. 4, 1936 2,049,867

UNITED STATES PATENT OFFICE

2,049,867

RADIO TUBE LABEL

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Application June 7, 1935, Serial No. 25,375

6 Claims. (Cl. 40—2)

My invention relates to means for marking articles to enable a purchaser to determine easily and quickly whether the article is new and genuine, and more particularly to means for marking radio tubes and similar articles which do not show visible evidences of use, and which may not be readily identified as the product represented.

Purchasers of radio tubes and similar articles which do not change to any appreciable extent in appearance during use find it difficult to determine by inspection whether tubes offered them are new and genuine. Packing the articles in sealed cartons which must be destroyed in order to free the article for use makes more difficult the sale of used tubes as new tubes, but such packing is rather expensive, and both the tube and the packing can be counterfeited.

An object of my invention is to mark articles such as radio tubes or lamps so that the purchaser can easily determine by a simple test whether the article is genuine, and can also tell by inspection whether the article has been used. Another object is to provide a label that will in effect guarantee that the radio tube is of the origin represented, and also show the extent to which the tube has been used. A further object is to provide a label which is difficult to counterfeit, and which cannot be transferred from a genuine tube to a counterfeit or used tube.

In accordance with my invention I provide a marking or indicator that will permanently change in appearance if the article is used, and which is not feasible to replace. I prefer to mark radio tubes and similar articles, which rise in temperature when used, by firmly securing to them by glue or similar adhesive a label or strip of paper or similar sheet material which is printed or marked with a sympathetic ink which permanently changes in color or appearance when heated to the temperature attained by the label when the tube or article is used. In addition the glued portion of the label may be marked with a water soluble ink or color which will run and change the appearance of the label if an attempt is made to soak or steam it off the tube. One end of the strip or label is preferably left free, and some identifying mark, such as the trademark of the maker, may be incorporated in the paper near the free end of the label. This mark is so made that it is visible only while the paper is wet, hence by wetting the free end of the label the purchaser can determine whether the tube is genuine.

In the drawing, in the several figures of which like reference characters represent similar parts, Figure 1 shows one form of radio tube to which my invention may be applied; Figure 2 shows diagrammatically the printed divisions into which my label may be divided; and Figure 3 shows a similar form of radio tube with a sectioned view of one form of my label attached thereto.

Referring to Figure 1, a thermionic discharge device or tube of conventional construction is shown with an envelope 1, base 2, and contact pins 3. While the device is shown with a conventional tapered form of bulb, my invention may be applied with equal facility to a discharge device with a metal or glass envelope with spherical or cylindrical walls. A label 4 of a strip of paper or similar material is attached at its upper end by an adhesive 5, such as gum or glue, to the side wall of the envelope, with the long axis of the label extending in the example shown parallel to the side of the bulb. The gummed portion of the label in this example is extended from a region adjacent the maximum diameter of the bulb downwards on the depending label to a line 6 which may be about one-third of the distance from the upper end of the label. Whether the envelope is tapered as shown or is spherical or cylindrical, the gummed portion of the label is preferably attached to the bulb at an area which attains the highest operating temperature, for reasons which will more fully appear hereinafter.

The label may be manufactured of a paper with an invisible water mark, the mark preferably being made to indicate the name or monogram of the maker of the article to be labeled. Such paper is known in which the water mark remains invisible except when wetted, at which time the marks become clearly visible. Paper containing such marks is difficult and expensive to make and in commercial practice is difficult to counterfeit by unauthorized persons. With the paper of the label limited to authorized manufacturers, a purchaser, therefore, may identify the article to which a label constructed in accordance with my invention is attached by simply moistening the lower or depending end of the label.

To guard against the removal by soaking of a genuine label and the placing of it on a used or spurious article, I print on the label at the place where it is glued to the bulb of the radio tube some mark or design in water soluble ink which will run and clearly indicate by its appearance that an attempt has been made to soak off the label. The monogram or trade mark of the

manufacturer, for example, may be printed in water soluble ink in the area indicated at 7.

To further protect the purchaser of a radio tube labeled in accordance with my invention, I print upon another area 8 of the glued portion of my label an indicia or character in sympathetic indicant. This ink may be of the type which permanently changes in color after being heated to a certain temperature for a predetermined time, and may be so selected that the heat from the radio tube to which the label is attached will permanently transpose and change in color the pigment of the ink on the label. It has been found that an organic coloring matter, such as erythrocine, applied to the label in a carrying agent, such as for example a diluted shellac, permanently and markedly changes in color when maintained for a time at a temperature of about 150° C. to 120° C. A permanent ink of a desired color may conveniently be placed near or adjacent the sympathetic ink on the label to aid in judging the color of the sympathetic ink. Further, an irregular design may be outlined by reverse printing to render it difficult to paint or ink over the background of sympathetic ink.

According to a further feature of my invention the lower end of the label may be perforated, as shown at 9, and the portion below line 9 may be printed with a serial number or other identifying mark to correspond with a similar number or mark on the gummed portion of the label. The seller of the tube may retain the portion below the perforation for the purpose of future identification of the radio tube.

It will be apparent, therefore, that a tube labeled in accordance with my invention, when operated for a predetermined time, directly indicates by the color of the ink in area 8 the fact that the tube has been used, and hence thereafter is notice to all that the tube is not new and unused.

In Figure 2 a label has been schematically represented as an oblong strip of paper. This strip of paper with its invisible water marks has been shown divided into various printing areas onto which may be impressed the water soluble and heat responsive inks, above mentioned. On still another portion of the label may be printed in ordinary printer's ink instructions for testing the tube for age and genuineness.

In Figure 3 the label is shown with its longitudinal axis parallel to the body of the tube with the lower or loose end of the label bearing against the base of the tube. The upper end of the label is glued at 5 over an extended area to cause the upper end of the strip to snugly engage the rounded wall of the bulb. By gluing the strip in this manner, the paper is transversely cupped or concaved throughout its length, which serves to stiffen the strip of paper throughout its length and hence causes the lower end of the strip to hang or lie in a curved plane substantially coextensive with the glued area of the strip label. While the lower end of the label may be bent outwardly for wetting, it is apparent that this lower end will return or snap back to its original position upon being released. By so transversely cupping the strip, it may at all times lie snugly adjacent the bulb of the radio tube and out of the way for handling.

A radio tube or similar article labeled in accordance with my invention is therefore characterized by the fact that the article may be positively identified as the product of the manufacturer represented, and by the fact that prior use of the article is permanently and visibly indicated on the exterior wall of the article with provision for effectively precluding counterfeiting of the label or the article to which it is attached.

While I have illustrated but one form of discharge device and but one form of label, it will be obvious to those skilled in the art that many modifications may be made in the discharge device and in the label without departing from the scope of my invention. I accordingly desire that my invention will be limited only by the prior art and by the appended claims.

I claim:

1. In combination, a radio tube, and a label comprising a sheet of material permanently attached by a soluble adhesive to the exterior of the tube wall and having on its surface an ink which changes permanently in apperance at the temperature attained by the tube wall when the tube is operated, and a marking on said label adjacent said adhesive soluble in the same solvent as said adhesive.

2. A radio tube comprising an envelope enclosing electrodes which heat said envelope during operation, an oblong label secured over a portion of its length to the exterior of the wall of said envelope by an adhesive and with another portion near one end free of said wall, said portion secured to said wall having on it ink, said adhesive and said ink being soluble in a common solvent and said free portion having on it a mark rendered visible by water.

3. In combination, an electron discharge device comprising an outer shell of circular cross section, and a label for said device comprising a strip of paper transversally cupped and extending longitudinally of said shell and secured at one end only by an adhesive to said shell, an ink marking on said one end of the strip, said adhesive and said marking being soluble in a common solvent, and a characteristic water mark visible only when wetting at the other end of said strip.

4. In combination with an article which heats in use, a label attached thereto by an adhesive soluble in a certain solvent, a marking on said label soluble in said solvent, and an indicia of ink on said label responsive to the heat of said article to change its appearance.

5. In combination with an article which heats, a label attached thereto by an adhesive soluble in a certain solvent, a marking of ink on said label, said adhesive and said ink being soluble in a common solvent, and an indicator on said label responsive to the heat of said article which changes permanently in appearance when heated to a predetermined temperature.

6. In combination an article having a portion which is heated in use, and a label attached by an adhesive to said portion, a marking of ink on said label, said adhesive and said ink being soluble in a common solvent, and an indicant on said label which permanently changes in appearance when heated by said portion of the article.

RALPH G. RICHARDS.