

Oct. 19, 1954

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2,692,077

PACKAGE FOR RADIO TUBES AND THE LIKE

Filed Dec. 11, 1948

3 Sheets-Sheet 1

Fig. 1

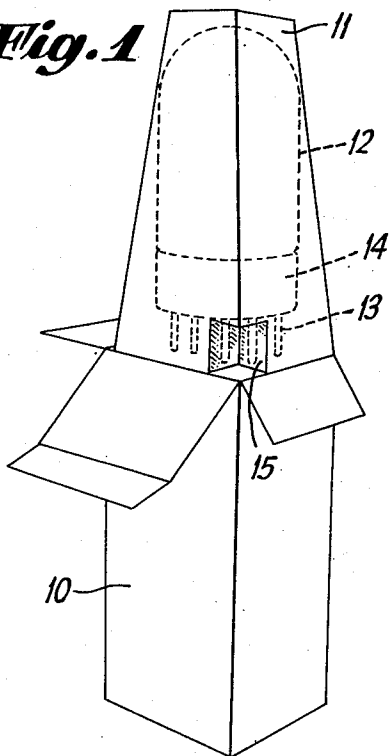


Fig. 2

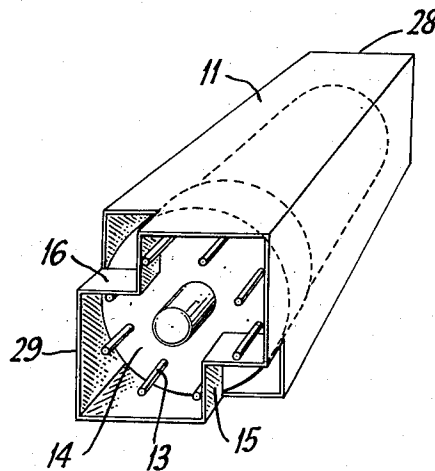
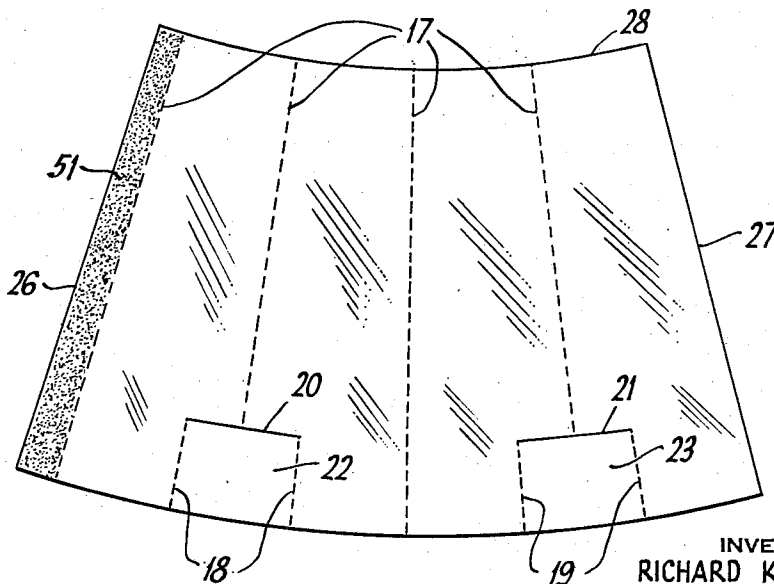


Fig. 3



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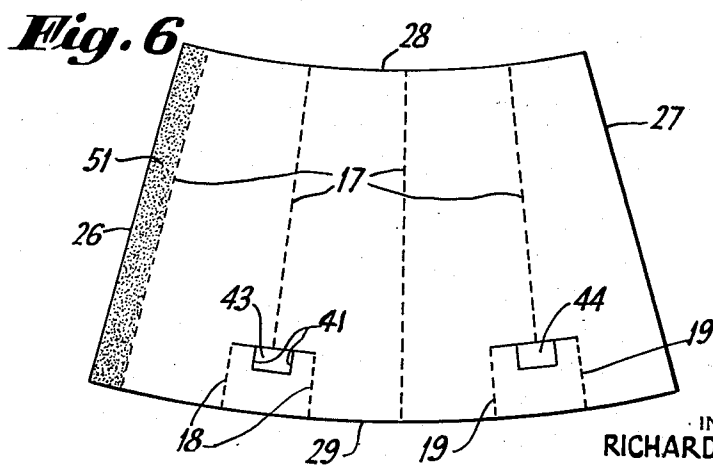
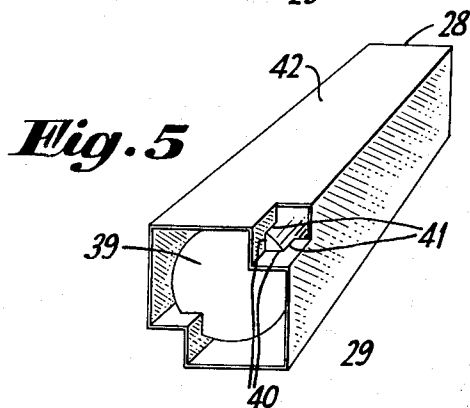
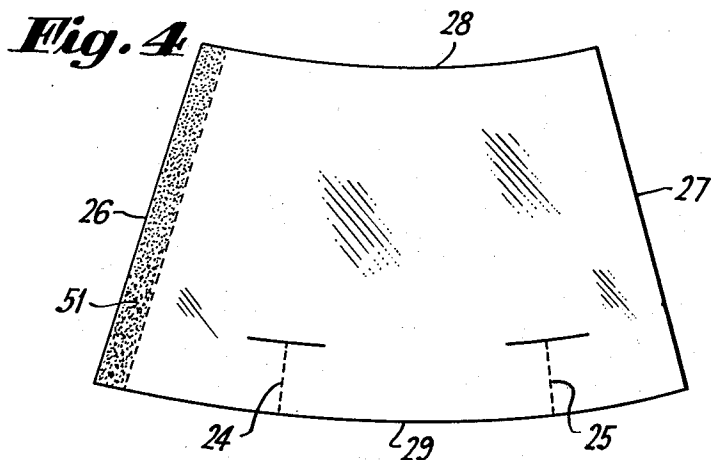
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PACKAGE FOR RADIO TUBES AND THE LIKE

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3 Sheets-Sheet 2



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Fig. 7

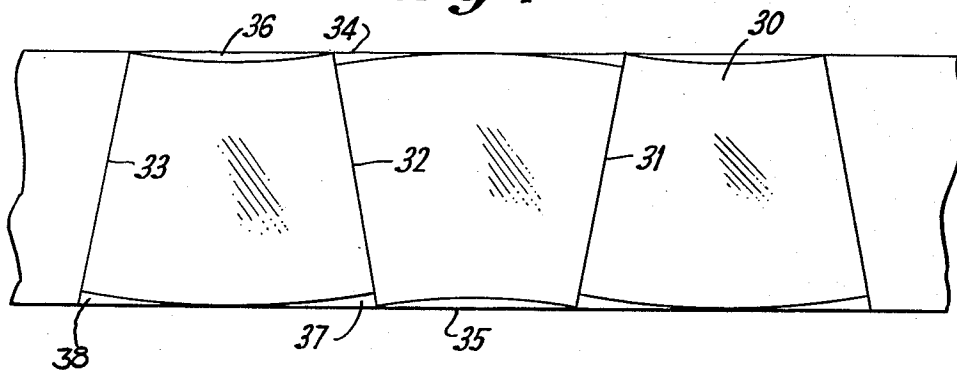


Fig. 8

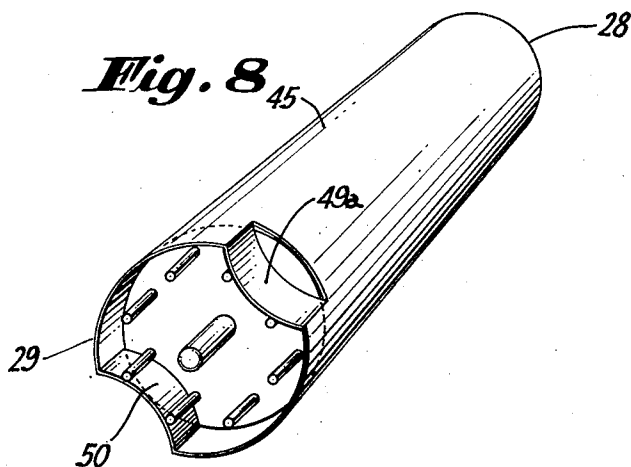
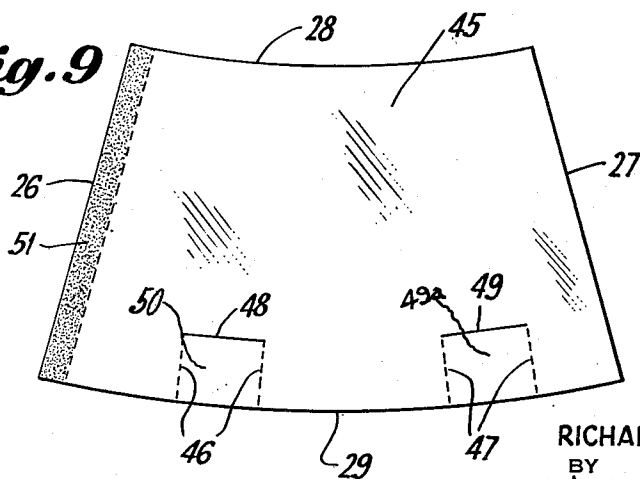


Fig. 9



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PACKAGE FOR RADIO TUBES AND THE LIKE

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Application December 11, 1948, Serial No. 64,753

1 Claim. (Cl. 229—14)

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The present invention relates to an improved package for radio tubes and the like and more particularly to a clip or inner support for such package.

Some packages or cartons for articles such as radio tubes include an outer container and an inner clip. The inner clip usually holds the packaged article and fits snugly within the outer container. It is designed to prevent free movement of the article within the container and to afford a cushion for absorbing shocks during handling.

Several problems are associated with packages of this type as used heretofore. One problem concerns the ability of the package to protect a fragile article such as a radio tube against shocks transmitted to the outer container. Ordinarily clips as heretofore used provide an edge support of the article within the package, one edge of the clip engaging a side of the article while the opposite edge thereof is in snug engagement with the inner walls of the outer container. While the resiliency of the material of the clip affords some protection against shock, the edgewise disposition of a portion of the clip between the packaged article and the outer container permits an undesirably large force component of a shock to be transmitted directly to the article with a consequent danger of breakage of the article. While some attempts have been made to overcome this difficulty, such as by disposing portions of the clip at greater or lesser angles than 90° with respect to the inner walls of the outer container, this also has been characterized by faulty adsorption of shocks imparted to the package, since in all such instances a relatively large portion of the clip is in some engagement with the outer container walls and subject to receipt of shocks which it transmits to the packaged article.

Another problem concerns the fabrication and assembly of a clip. A stock of flat material such as cardboard, paperboard, boxboard, or some other such material, is usually first cut out to a desired planar form with score lines and cuts therein, and then formed into a clip by folding along the score lines. Heretofore score lines have been disposed angularly with respect to each other requiring a plurality of folding operations along non-parallel lines. This has involved a complicated operation resulting in slow production schedules. Moreover, the blanks formed heretofore in planar form have included projections from the edges thereof such as wings or flaps or tabs, which were easily torn off or

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damaged during handling of the blanks. This structure having flaps or tabs of the prior art blanks has resulted in undesirable waste of the blank material, since a substantial portion of the blank edges is required to be cut away in forming the projections.

It is therefore the object of the invention to provide an improved package or carton for radio tubes and the like, capable of increased protection against shocks and involving a relatively simple structure.

Another object is to provide a package or carton having an outer container and an inner clip or holder wherein a relatively large portion of the clip is free to move relatively to the container to reduce the force of shocks on a packaged article.

A further object is to provide an improved clip or holder for fragile articles that is characterized by simplicity and economy in blank form, ease in forming the clip therefrom, and increased efficiency as a shock absorber.

Another object is to provide a package for fragile articles in which the structure of an outer container and an inner clip is so correlated that the clip is fixed at one end only within the container for preventing lateral displacement of the clip at this end with respect to the container.

Another object is to provide a package for fragile articles including an outer container and an inner clip, in which the clip comprises a tubular body having open ends, the walls of the clip adjacent one end thereof engaging a packaged article, the walls adjacent the other end thereof being displaced from the article and engaging said container, whereby shocks transmitted to the container are absorbed by the free movement of said clip at one end of the package and by the free movement of said article at the other end of the package.

A further object is to provide a clip blank having substantially straight edges to minimize damage to the blank in handling and to avoid waste of blank stock.

Another object is to provide a clip blank having score lines disposed in substantially parallel relation to each other to simplify the folding operations required to form a clip therefrom.

Further object is to provide a clip having side walls engaging one end portion of an elongated article and spaced from the other end portion thereof to provide shock insulation for said article.

Further objects and advantages will be re-

ferred to in the following description taken in connection with the appended drawing in which,

Figure 1 is a view in perspective of my novel package showing the inner clip removed from the outer container;

Figure 2 is a perspective view of my novel clip with a radio tube contained therein;

Figure 3 depicts one face of the blank from which my novel clip is formed;

Figure 4 shows the opposite face of my novel blank;

Figure 5 is a perspective view of a modification, wherein the article packaged is not provided with the contact prongs of a radio tube;

Figure 6 is a blank from which the clip shown in Figure 5 is formed;

Figure 7 illustrates an advantage of my novel blank in permitting a plurality of clips to be cut from strip stock with a minimum of waste of such stock;

Figure 8 is a perspective view of a further modification wherein my novel clip is provided with a frusto-conical shape, and

Figure 9 is a blank from which the clip shown in Figure 8 is formed.

Referring in more detail to the drawing, there is shown in Figure 1 a carton or package including an outer container 10, and an inner clip or holder 11, adapted to support an article such as a radio tube 12 shown in dotted lines, having contact prongs 13.

According to the invention the clip or holder 11 comprises a structure having side walls only, each of the side walls extending from a relatively wide base to a relatively narrow top portion. The space defined by the top portion of the clip receives snugly the top portion of an article such as a radio tube 12. The space defined by the lower end portion of the clip receives loosely the lower end portion or base 14 of the radio tube 12. As a matter of fact the space defined by the lower portion of the clip 11 is large enough to provide a free space between the lower side walls of the clip and the base 14. The snug engagement between the upper portion of the clip 11 and the upper part of the radio tube 12 serves to prevent movement of the tube longitudinally with respect to the clip in an upward direction, while such movement in a downward direction is prevented by the collapsed corner portions 15, 16 shown more clearly in Figure 2, which supply supporting edges for the bottom face of base 14.

The collapsed corner portions 15, 16 are particularly suited for supporting an article having downwardly extending prongs such as radio tubes. For example, the dimensions of the collapsed corner portions may be so co-ordinated with the spacing of prongs 13 from each other and from the edge of the base 14, so as to permit the walls included in said collapsed corner portions to enter the space between two prongs and engage said prongs in a snug fit. Such engagement it will be noted is between an intermediate portion of the walls of the collapsed corner portions and a prong. The advantage of this will be stressed more fully as the description proceeds.

It will be noted from the foregoing that the clip of my invention supports one end portion, for example, a top portion, of an article in a snug fit for restraining all relative movement laterally between said end portion of the article and the top portion of the clip, and relative movement longitudinally between the article and

the clip in one direction, and supports the other end portion of the article against longitudinal movement in the opposite direction, while permitting some lateral movement of the article at this end with respect to the clip. When the clip 11 is placed in the outer container 10, this manner of engagement of the article by the clip is of particular advantage. Thus, when the clip 11 is placed within container 10 the wider base portion of the clip engages the walls of the container in a snug fit, thus preventing lateral movement of said base portion with respect to the container. The upper portion of the clip 11, however, is displaced from the walls of the outer container to permit relative movement laterally therebetween. Therefore a lateral shock applied to the container 10 is absorbed in lateral movement of the article and by the clip with respect to the container at both the upper and lower portions thereof, thereby minimizing the force of such shock and preserving the article against breakage.

An additional advantage of my novel clip resides in its accomplishment of a desired support of an article without end closures. It will be noted that the converging walls of the clip 11 provide sufficient end support of the packaged article at its top and the collapsed corners 15, 16 contribute the necessary end support at the bottom. There therefore results from my invention an appreciable economy in the amount of blank stock required for my novel clip.

Figures 3 and 4 show opposite faces of my novel clip blank. Figure 3 shows the face that forms the outer surface of my completed clip. Substantially parallel score lines 17 are applied longitudinally of the blank along which folds may be made to provide a conically shaped tubular structure. These score lines may be radial extensions from a common center. Score lines 18, 19 are disposed adjacent the lower and wider edge of the blank and transverse cuts 20, 21 connect the upper ends of the score lines 18 and 19, respectively. Cuts 20, 21 permit the folds along score lines 18, 19 to be made to dispose the rectangular blank portions 22, 23 out of the planes of the adjacent blank portions. In Figure 4 the score lines 24, 25 are shown on the reverse face of the blank. The disposition of the score lines on this face results in a collapse of the two lower corners of the clip, since these score lines permit a fold only in a direction in which such collapse can occur.

It will be noted from Figure 3 that the edges of my novel blank extend in substantially straight lines. Thus edges 26, 27 are actually straight and converge towards each other, while edges 28 and 29 are slightly arcuate to permit of the conical configuration of my clip, while preserving the co-planar relationship of the edges forming each end portion of my clip.

My novel clip blank may be cut out from a supply of stock 30 shown in Figure 7 having a width at least as large as the maximum length of my blank. The cuts 31, 32, 33 are applied along straight lines having a similar angular relationship to either the upper or the lower edges of stock 30. For example, the blank formed by cuts 32 and 33 is provided with sides defining a predetermined form and angularly related to the upper edge 34 of the stock, while the cuts 31 and 32 result in the formation of a blank having the same form and angular relationship but using the bottom edge 35 of the stock as the datum line. Since one cut, for example, cut

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32, provides edges for two adjacent blanks, there is no waste in stock material in providing side edges for the blanks. The only waste occurs at the end portions of the blank where stock portions 36, 37 and 38 are cut away. This however is a relatively small amount of waste and is considerably less than that involved in prior practices.

Not only does the novel form of my blank result in a saving of the stock material, but since the edges are substantially straight, it renders my blank less susceptible to damage in handling, there being no relatively weak edge portions such as wings or tabs that might break off.

Figures 5 and 6 show a clip I may use for an article other than a radio tube which does not have prongs extending from one end thereof. In this illustration the article to be packaged by my novel carton is provided with a flat bottom 39. Since the prongs of a radio tube served in the previous embodiment of the invention to engage the walls of the collapsed corner portions for holding the lower portion of the tube in spaced relation with respect to the lower portion of my clip, the absence of such prongs from the article 39 necessitates a modification in the structure of the collapsed corner portions of the clip. As shown in Figure 5, this modification comprises providing steps 40, for engaging the lower face of article 39 and riser portions 41 for engaging the sides of the article to provide a suitable space relationship between the lower portion of the clip 42 and the article 39. This also provides resilient means for absorbing shocks transmitted laterally to the outer container 10 in which clip 42 is adapted to fit in a manner similar to clip 11. In order to obtain the stepped form of the collapsed corner, a slight change in the blank form is required. This change is illustrated in Figure 6, wherein the boxed portions 43 and 44 of the blanks are cut out, thus providing the steps 40 and the riser 41 when the clip is formed. The score lines are similar to those provided on the blank for clip 11.

A further modification of the invention is shown in Figures 8 and 9. In this modification a blank 45 is provided having only score lines 46 and 47 and cuts 48 and 49. The overall shape of the blank 45 is the same as that used for forming clips 11 and 42. Blank 45 however, instead of requiring folds to provide a structure having four flat walls converging at one end, simply requires a rolling of the blank to provide the frusto-conical structure shown in Figure 8. If the blank shown in Figure 9 is rolled into the paper the material will fold along the score lines 46 and 47 to provide collapsed edge portions 49a and 50, in the lower periphery of the clip as shown in Figure 8. These collapsed edge portions are dimensioned to engage the underside of an article such as a radio tube 12 and to snugly fit across contact prongs thereof.

Each of the blanks required for clips 11, 42 and 45, is provided with adhesive paste or glue 51 adjacent a side edge for causing a portion of the blank adjacent edge 26 to adhere to a portion adjacent edge 27 after formation of the clip.

It will be appreciated from the foregoing that I have provided an improved package or carton

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which includes an inner clip having upwardly converging walls to provide a conical structure for engaging the upper portion of an article and lower walls displaced from the article and including collapsed lower side portions for supporting the lower end of the article in a resilient manner. The entire article is effectively insulated from shocks applied to the outer container in which the clip is disposed to fit.

Various modifications may be made in the invention without departing from its spirit and scope as pointed out in the appended claim.

I claim:

A carton adapted to package and insulate against laterally applied impacts an electron tube having an elongated envelope and contact prongs extending longitudinally from one end of said envelope, said carton comprising an elongated tubular inner clip having laterally flexible means at one end thereof said flexible means comprising two opposed wedge shaped structures integral with said clip and having apices extending inwardly of said clip, said wedge shaped structures being adapted to extend between two pairs of oppositely disposed contact prongs of an electron tube received by the clip, said wedge shaped structures having flat flexible elongated sides adapted to engage sides of said prongs substantially midway between the ends of said elongated sides, said wedge shaped structures having edges lying in a common plane normal to said sides and adapted to engage said one end of the tube envelope, whereby said wedge shaped structures are adapted to support said one end of the tube envelope, said support being effective to insulate said one end from impacts applied laterally to said clip and to restrain axial movement of the tube in one direction within said clip, said clip having a converging wall portion adjacent its other end adapted to engage snugly the other end of said envelope, and an outer container for receiving said clip and having side walls adjacent one end thereof for snugly engaging the clip adjacent said one end thereof, said outer container having side walls adjacent the other end thereof spaced from said converging wall portion of said clip, whereby said converging wall portion is adapted to restrain axial movement of said tube in said clip in a direction opposite to said one direction and to insulate said other end of the tube envelope against impacts applied laterally to said outer container.

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