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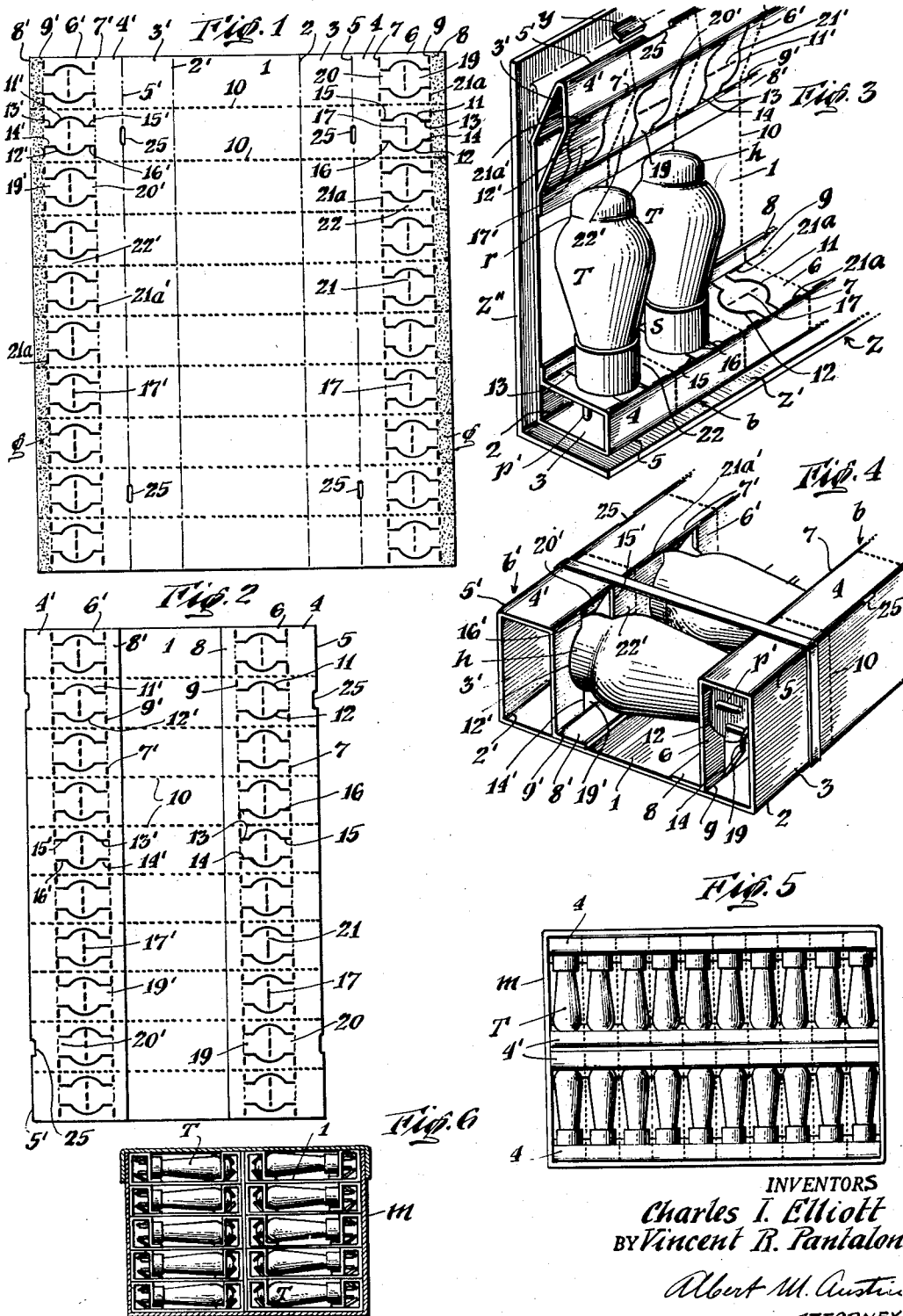
C. I. ELLIOTT ET AL

2,368,753

PACKAGE FOR RADIO TUBES AND THE LIKE

Filed April 25, 1942

3 Sheets-Sheet 1



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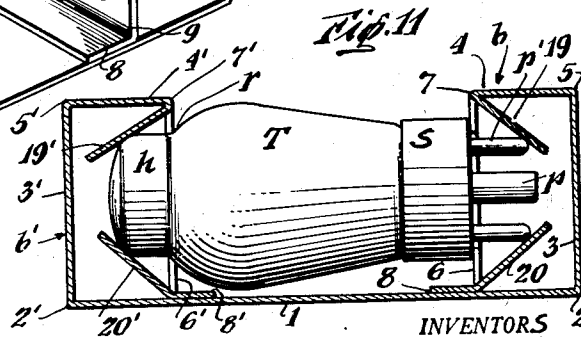
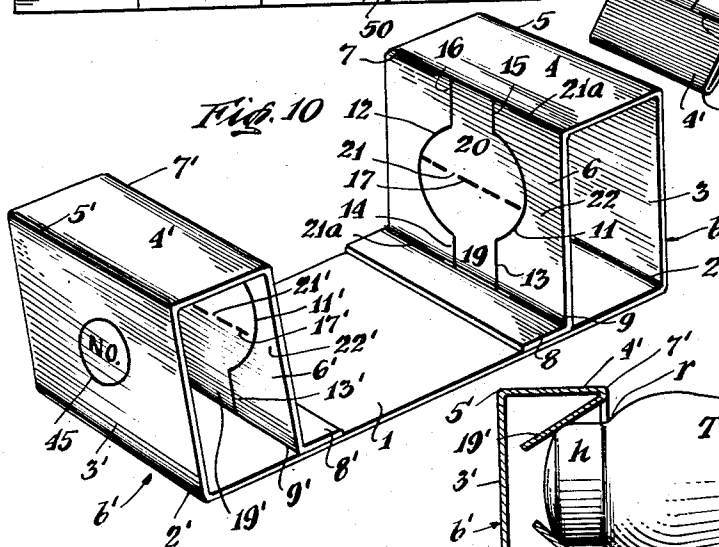
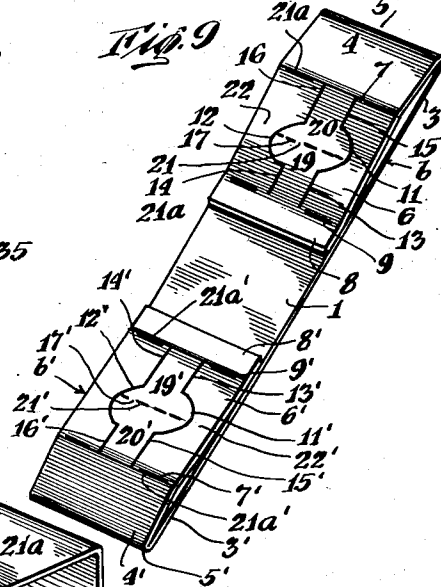
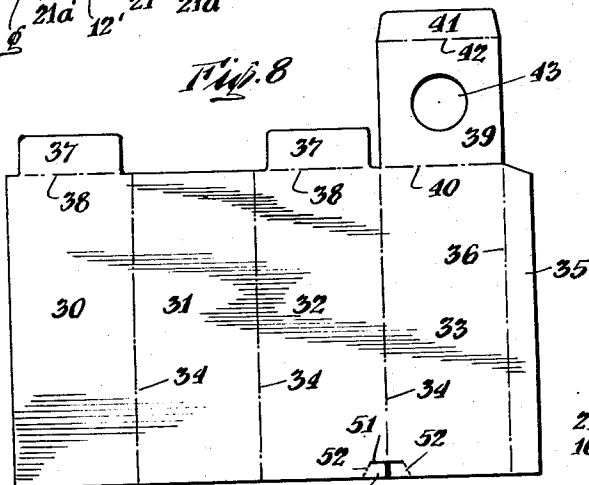
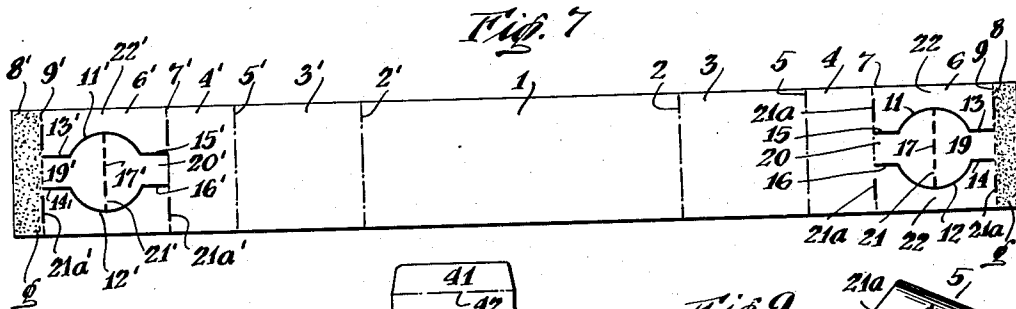
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PACKAGE FOR RADIO TUBES AND THE LIKE

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3 Sheets-Sheet 2



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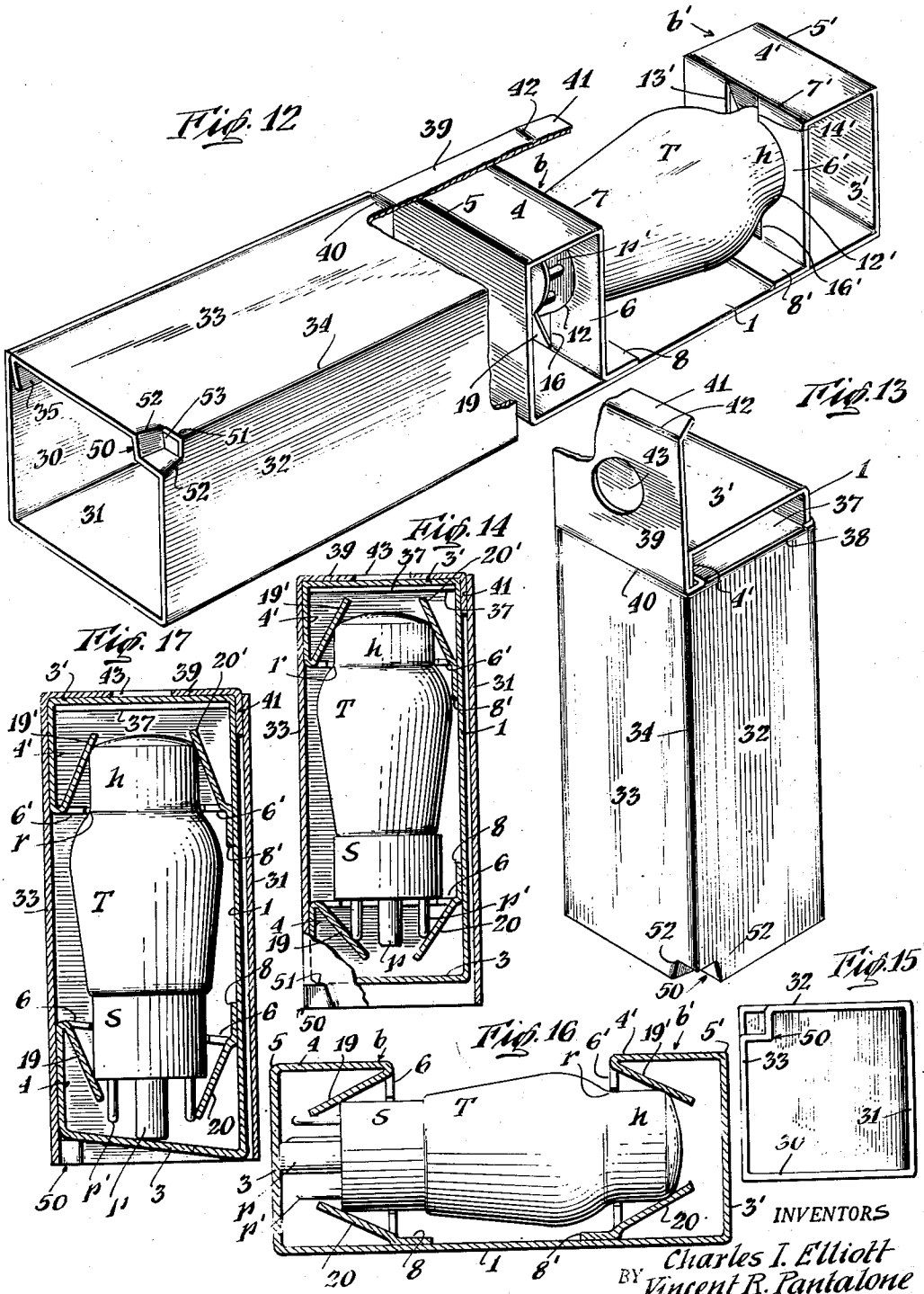
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PACKAGE FOR RADIO TUBES AND THE LIKE

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3 Sheets-Sheet 3



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2,368,753

PACKAGE FOR RADIO TUBES AND THE LIKE

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Application April 25, 1942, Serial No. 440,420

6 Claims. (Cl. 229—28)

This invention relates to an improved package for radio tubes and the like, which can be constructed and loaded with great economy in labor and material.

Under present conditions of labor and material shortages, there is an increasing demand for some means of packaging delicate articles, such as radio tubes, which can be economically formed and assembled at a high production rate, which can be loaded with either a single radio tube or a plurality of radio tubes with a minimum consumption of time and effort, and which nevertheless provides protection for the delicate tubes against damage resulting from shocks and jolts to which the package is often subjected during shipment and handling.

This invention comprehends the provision of a gang clip which may be formed from a single blank of paperboard material which permits complete formation thereof by a single pass through a cutting and scoring machine. The paperboard blank need be imprinted on only one side thereof, which may be done either before or after the cutting and scoring operation. The cut and scored blank is rectangular in outline and results in no waste paperboard material. The prepared blank may be quickly assembled to provide a gang clip adapted to contain and support any desired number of radio tubes by passing the blank through a high speed strip gluing and folding machine. The blank need be folded along each end thereof only so that when the blank emerges from the gluing and folding machine there is provided a collapsed box formation at each end thereof. The blank may be provided with a series of perforations extending in parallel relationship longitudinally across the blank which permits the assembled blank to be broken into individual clip-forming segments if individual packing of the tubes is desired.

The collapsed gang clip may be shipped to the radio tube manufacturer in collapsed form, requiring minimum shipping and storage space. When tubes are to be packaged therein, one of the box formations may be extended into rectangular form by pressing the same against the horizontal flange of an angle-shaped jig, which causes immediate expansion of the box formation into rectangular form. Means are provided

on the jig to retain the other parts of the gang clip in a position where such parts will not interfere with rapid insertion of the tubes into the erected box formation resting on the horizontal flange of the jig. When the tubes have been inserted into the spaced openings provided in the erected box formation, the box formation at the other end of the gang clip is swung down over the head ends of the tubes with the head end of each tube inserted into an opening provided in the upper box formation.

The box formations at each end of the clip are so formed and constructed that they will automatically assume the desired rectangular box formation when inward pressure is exerted on the ends of the collapsed clip. Each box formation is provided with an outer relatively rigid end wall section and a relatively resilient inner end wall section, which resiliency is attained by reason of the particular shape of the openings cut in the inner end wall sections which receive and support the ends of the tubes. While the inner end wall sections desirably have a resilient bending characteristic, they are so constructed and formed that they will not fold or collapse during erection of the box formations and are sufficiently strong so that they will amply support the tubes suspended therebetween.

Where a substantial number of tubes is demanded by the tube user, the loaded gang clips may be placed in a shipping case with the gang clips stacked therein in vertical columns. Where the tubes are to be individually packaged, each individual tube loaded clip may be telescoped within an outer tubular sleeve which is provided with means at each end thereof for supporting the box formations in fixed position within the outer sleeve. The sides and one or both ends of the tube, whether packaged in a gang clip or an individual clip, are spaced from the outer protecting walls of the clip and the containing sleeve or shipping case, so that blows delivered to the outer walls of the sleeve or case will not be transmitted to the tubes. The means for packaging radio tubes which we have provided thus insures protection to the tubes from external blows or shocks with the assurance that the tubes will reach their destination in perfect working condition irrespective of the rough handling they may receive en route. The packaging material

inventory which the radio tube manufacturer must normally carry to supply packaging mediums for his numerous and differently shaped radio tubes, is also materially reduced by the use of our improved interchangeable bulk and individual packaging mediums.

Various other features and advantages of the invention will be apparent from the following particular description and from an inspection of the accompanying drawings.

Although the novel features which are believed to be characteristic of this invention will be particularly pointed out in the claims appended hereto, the invention itself, as to its objects and advantages, and the manner in which it may be carried out, may be better understood by referring to the following description taken in connection with the accompanying drawings forming a part thereof, in which

Fig. 1 is a plan view of a paperboard blank cut and scored to form a gang clip for the packaging of a plurality of radio tubes and the like;

Fig. 2 is a plan view of the gang clip assembled in collapsed flat form from the blank shown in Fig. 1;

Fig. 3 is a fragmentary perspective view of the gang clip held in partially erected form by an angle-shaped jig and undergoing loading with radio tubes;

Fig. 4 is a fragmentary perspective view of the fully assembled and erected gang clip showing the manner in which the radio tubes are mounted therein;

Fig. 5 is a top plan view of a shipping case showing the manner in which the gang clips may be arranged therein for shipment;

Fig. 6 is a transverse cross-sectional view through the shipping case showing the manner in which the clips may be stacked therein;

Fig. 7 is a plan view of a paperboard strip which may be removed from the gang clip forming blank, shown in Fig. 1, the strip being ready for assembly into an individual clip adapted to contain and support a single radio tube;

Fig. 8 is a plan view of a prepared paperboard blank from which the outer sleeve or carton for receiving the loaded clip may be formed;

Fig. 9 is a perspective view of the collapsed individual clip which may be assembled from the strip shown in Fig. 7 or which may be removed from the collapsed gang clip shown in Fig. 2;

Fig. 10 is a perspective view of a partially erected clip ready to receive a radio tube;

Fig. 11 is a longitudinal cross-sectional view through the erected clip showing the manner in which the radio tube may be positioned and supported therein;

Fig. 12 is a perspective view of the loaded clip in process of being inserted into the outer sleeve;

Fig. 13 is a perspective view of the loaded clip at a further stage of insertion into the outer sleeve;

Fig. 14 is a vertical cross-sectional view of the completed package;

Fig. 15 is a bottom end view of the completed package;

Fig. 16 is a longitudinal cross-sectional view through a loaded clip of shorter dimension than the clips shown in Figs. 4 and 11, this view showing the manner in which the tube may be mounted in the shortened clip as a measure to further conserve paperboard; and

Fig. 17 is a vertical fragmentary cross-sectional view showing the manner in which the shortened

clip may be mounted in a shortened outer sleeve to conserve paperboard.

Similar reference characters refer to similar parts throughout the several views of the drawings and the specification.

The improved gang clip is formed from a substantially rectangular blank of paperboard material, as shown in Fig. 1, and may be made in any desired size to carry any desired number of radio tubes and like articles. The prepared blank comprises a center or main side wall section 1 which is defined by a pair of parallel score lines 2 and 2' which extend transversely of the blank. An outer end section 3 is hinged to the side wall section 1 along the fold line 2 and an opposite outer end section 3' is hinged to the side section 1 along the fold line 2'. A reduced side section 4 is hinged to the outer end section 3 along a fold line 5 which parallels the fold line 2 and a reduced side section 4' at the other end of the blank is hinged to the outer end section 3' along a fold line 5' which parallels the fold line 2'. An inner end wall section 6 is hinged to the reduced side wall section 4 along a fold line 7 which parallels the fold line 5 and at the other end of the blank an inner end wall section 6' is provided which is hinged to the reduced side wall section 4' along a fold line 7' which parallels the fold line 5'. A glue flap 8 is hinged to the inner end wall section 6 along a fold line 9 which parallels the fold line 7. A glue flap 8' is hinged to the inner end wall section 6' along a fold line 9' which parallels the fold line 7'.

The blank as shown in Fig. 1 may be provided with a series of perforated lines 10 which extend in parallel relationship longitudinally across the blank, which perforated lines define therebetween a series of strips from which individual radio tube supporting clips may be assembled. Thus the blank as shown in Fig. 1 may be used to form a gang clip for the reception and packaging of a plurality of radio tubes, or the blank may be separated along the perforated lines 10 to provide a plurality of separate strips each to form individual clips in which single radio tubes may be packaged. Thus the same blank may be used for gang packaging or individual packaging of radio tubes.

The inner end wall section 6 is cut and scored to provide a puncturable opening between each pair of perforated lines 10 for the reception of either the base end or the head end of the tube. Each puncturable opening is defined by a pair of arcuate cuts 11 and 12 which if joined would form a substantially true circle. One end of the arcuate cut 11 is intersected by a substantially straight longitudinally extending cut line 13 which terminates at the fold line 9 and the adjacent end of the arcuate cut 12 is also intersected by a substantially straight longitudinally extending cut line 14 which parallels the cut line 13 and intersects the fold line 9.

The other end of each arcuate cut line 11 is intersected by a substantially straight longitudinally extending cut line 15 which is substantially in alignment with the cut line 13 and terminates at the fold line 7. A similar substantially straight longitudinally extending cut line 16 in substantial alignment with the cut line 14 intersects the other end of each arcuate cut line 12 and terminates at the fold line 7. An interrupted cut line 17 extends transversely of the blank and diametrically between each pair of arcuate cut lines 11 and 12, which when broken

separates the wing portions 19 and 20, permitting wing portion 19 to swing about the fold line 9 and the wing portion 20 to swing about the fold line 7. Each of the interrupted cut lines 17 is interrupted only by narrow necks 21 of paperboard material, as shown more particularly in Fig. 3, which are readily broken when inward pressure is exerted upon the wing portions 19 and 20.

The inner end wall section 6' at the other end of the blank is likewise cut and scored to provide a puncturable opening between each pair of perforated lines 10 for the reception of the opposite end of the tube. The puncturable openings in the inner side wall section 6' may be similar in shape and form to the puncturable openings in the inner side wall section 6, each opening being defined by a pair of arcuate cuts 11' and 12' which if joined would form a substantially true circle. One end of arcuate cut 11' is intersected by a substantially straight longitudinally extending cut line 13' which terminates at the fold line 9' and the adjacent end of the arcuate cut 12' is also intersected by a substantially straight longitudinally extending cut line 14' which parallels the cut line 13' and intersects the fold line 9'.

The other end of each arcuate cut line 11' is intersected by a substantially straight longitudinally extending cut line 15' which is substantially in alignment with the cut line 13' and terminates at the fold line 7'. A similarly substantially straight longitudinally extending cut line 16' which is substantially in alignment with the cut line 14' intersects the other end of each arcuate cut line 12' and terminates at the fold line 7'. An interrupted cut line 17' extends transversely of the blank and diametrically between each pair of arcuate cut lines 11' and 12', which when broken separates the wing portions 19' and 20', permitting wing portion 19' to swing about the fold line 9' and wing portion 20' to swing about the fold line 7'. Each of the interrupted cut lines 17' is interrupted only by narrow necks 21' of paperboard material, as shown more particularly in Fig. 3, which are readily broken when inward pressure is exerted on wing portions 19' and 20'.

The outer end wall section 3, the reduced side wall section 4 and the inner end wall section 6 at one end of the blank are to be folded to provide a generally rectangular box formation b, as shown more particularly in Fig. 4. At the other end of the blank the outer end wall section 3', the reduced side wall section 4' and the inner end wall section 6' are likewise to be folded to provide a generally rectangular box formation b', as shown in Fig. 4.

To facilitate folding and erection of the blank, the fold lines 7 and 9 are each provided with a series of spaced cuts 21a which are located in the line of the fold and assures positive bending of the blank into the box formation b and prevents undesired bending of the blank at points 22 between the arcuate cut lines 11 and 12 of adjacent clips. It will be particularly noted that the cuts 21 in the fold lines 7 and 9 are of such length as to reduce the resistance to bending along the fold lines 7 and 9 to the point where such bending resistance is less than the resistance to bending between the arcuate cut lines 11 and 12 of adjacent individual clips, so that the paperboard material at points 22 will not bend out of shape when the box formation b is made. Likewise spaced cuts 21a are provided in fold lines

7' and 9' so as to reduce the resistance to bending along the fold lines 7' and 9' to a point less than the resistance to bending at points 22' between the arcuate cut lines 11' and 12' between adjacent clips.

The blank as shown in Fig. 1 may be cut and scored at a high production rate on an automatic cutting and scoring machine substantially without waste of paperboard material and at low cost. The blank in the form shown in Fig. 1 may also be printed or lithographed on the out-folding side thereof to carry any desired advertising matter, tube identification marks, or other data. The blank as shown in Fig. 1 is then run through a strip gluing machine where a strip of adhesive g is applied to the glue flaps 8 and 8'. The strip gluing machine also operates to fold each end of the blank about the fold lines 5 and 5' so that the reduced side wall section 4, inner end wall section 6 and glue flap 8 are superimposed over the outer end wall section 3 and the main side wall section 1, and likewise reduced side wall section 4', inner end wall section 6' and glue flap 8' is superimposed over the outer end wall section 3' and the main side wall section 1, as illustrated in Fig. 2. The strip gluing machine also operates to press the glue flaps 8 and 8' into adhesive contact with the inside face of the main side wall section 1, as illustrated in Fig. 2. The assembled collapsed clip as shown in Fig. 2 may be shipped in assembled collapsed form from the box manufacturing plant to the manufacturer of the radio tubes, thus occupying a minimum of space during shipment and storage.

The radio tubes may be quickly packaged in the gang clip by the operator who tests and inspects each tube before packaging. The testing and packaging operator is provided with an angle-shaped metal jig 2, as shown in Fig. 3, which comprises a horizontal flange z', which rests upon or is attached to a convenient workbench, and a vertically extending flange z''. The operator picks up the collapsed blank as shown in Fig. 2 and rests the folded edge 5 upon the horizontal flange z'. A downward pressure is exerted upon the blank which causes the outer end wall section 3 to collapse into flat position against the inside surface of the horizontal flange z' and causes the box formation b to expand into rectangular form, as shown more particularly in Fig. 3. The folded edge 5' is telescoped under a plurality of lips y which extend from the vertical flange z'' of the jig. The blank is thus retained in the jig with the box formation b fully expanded into rectangular form and resting upon the horizontal flange z' with the main side wall section 1 resting substantially flat against the inside face of the vertical flange z''. As each tube is tested and passes inspection, the operator presses the prongs p of the tube against the wing portions 19 and 20 which readily break apart along the interrupted cut line 17. The wing portions 19 and 20 swing inwardly into the box formation b, and the base s of the tube T seats upon the inner end wall section 6.

When the box formation b has been filled with a row of tubes T the gang clip is removed from the jig and the box formation b' at the other end of the blank is swung down so as to cause the head end h of each tube to press against the adjacent pair of wing portions 19' and 20' which are in alignment with the tube. This pressure

75 separates the wing portions 19' and 20' along

the interrupted cut line 17', permitting the head end *h* of the tube to become inserted into the opening thus formed. The wing portions 19' and 20' swing inwardly and the box formation *b'* automatically expands into substantially true rectangular form. The erected gang clip filled with radio tubes then appears as shown in Fig. 4.

It will be noted that the box formations *b* and *b'* may be identical in form and construction, so that either box formation may be used to support either the base end *s* or the head end *h* of the tube. Thus by making the box formations *b* and *b'* identical in construction, the operator need not be concerned which box formation is placed upon the horizontal flange *z'* of the jig. A shallow notch 25 may be cut in the folded edge 5' of the blank to permit the lip *y* to obtain a more positive grip on the blank. Likewise one or more similar notches 25 may be cut in the folding edge 5 of the blank in event the operator places a blank in the jig in a position where the folded edge 5 would be engaged by the projections *y*. A gang clip which permits high speed packaging of radio tubes therein is thus provided.

It will be noted that when the gang clip has been loaded with radio tubes, as illustrated in Fig. 4, each tube may be suspended therein with the center prong *p* and outer prongs *p'* out of contact with the outer end wall 3, with the head end *h* out of contact with the outer end wall 3', and with the belly or body of the tube centered in each of the box formations *b* and *b'* and out of contact with the main side wall section 1. The loaded gang clips can be placed in a suitable corrugated paperboard shipping case or container *m*, as illustrated in Figs. 5 and 6. Ten loaded gang clips stacked in two columns of five each may be contained in a single shipping case without resulting damage to the tubes during shipment or handling.

It will be noted by referring more particularly to Fig. 6 that each tube is suspended in its gang clip completely out of contact with any of the other tubes. The inner end wall sections 6 and 6' which support the tubes are relatively resilient due to the fact that the wing portions 19 and 20 and wing portions 19' and 20' have been removed from the respective inner end wall sections 6 and 6', giving more resiliency to the remaining material. If the shipping case as shown in Fig. 6 is dropped on its bottom or on its top, the flexible inner end wall sections 6 and 6' absorb the shock. It will be further noted by referring to Fig. 5 that the tubes are spaced laterally along the gang clip a considerable distance apart and the inner end wall sections 6 and 6' provide the same resiliency and adaptability to absorb shock delivered against the sides of the shipping case. Thus the improved gang clip as herein disclosed protects the delicate tubes at their critical points against damage resulting from rough handling of the packing case. This method of packaging is especially adapted for the shipment and delivery of radio tubes to quantity users of such tubes.

This invention also comprehends the provision of an individual package for radio tubes in which the assembled gang clip, as shown in Fig. 2, can be separated into its individual component clips and each individual clip used to contain a single radio tube. It is more convenient and more economical to first form a gang clip from the paperboard blank as shown in Fig. 1, glued and assembled in collapsed form as shown in Fig. 2, and thereafter provide the individual assembled collapsed clips by separating the gang clip along the

perforated lines 10. To facilitate explanation, however, a single strip of paperboard material is shown in Fig. 7 adapted to form an individual clip.

The cut and scored strip as shown in Fig. 7 comprises the same component parts which form the gang clip heretofore described, including a main side wall section 1, an outer end wall section 3 hinged to one end of the main side wall section 1 along the fold line 2, a reduced side wall section 4 hinged to the outer end wall section 3 along the fold line 5, an inner end wall section 6 hinged to reduced side wall section 4 along the fold line 7, and a glue flap 8 hinged to the inner end wall section 6 along fold line 9. A corresponding outer end wall section 3' is hinged to the other end of the main side wall section 1 along fold line 2', a reduced side wall section 4' is hinged to the outer end wall section 3' along the fold line 5', an inner end wall section 6' is hinged to the reduced side wall section 4' along fold line 7', and a glue flap 8' is hinged to the inner end wall section 6' along fold line 9'. The fold lines 2, 5, 7 and 9 and fold lines 2', 5', 7' and 9' extend substantially in parallelism transversely across the strip.

The inner end wall section 6 is punctured by a pair of arcuate cut lines 11 and 12 which if continued would form a substantially true circle. Cut lines 13 and 15 which are substantially in alignment extend longitudinally of the strip from the opposite ends of the arcuate cut line 11. Cut line 13 extends to the fold line 9 and cut line 15 extends to the fold line 7. Cut lines 14 and 16 which are substantially in alignment, extend longitudinally of the strip from the opposite ends of the arcuate cut line 12, cut line 14 terminating at fold line 9 and fold line 16 terminating at fold line 7. An interrupted cut line 17 extends diametrically between the arcuate cut lines 11 and 12 and defines the separable wing portions 19 and 20. The fold lines 7 and 9 are each provided with a pair of aligned cuts 21 to facilitate bending of the material along these fold lines and to decrease the resistance to bending of these fold lines to a point less than the resistance to bending at points 22.

The other end of the strip is similarly formed and is provided with arcuate cut lines 11' and 12'. The ends of arcuate cut line 11' are intersected by longitudinally extending aligned cut lines 14' and 15', and the ends of arcuate cut line 12' are intersected by the longitudinally extending aligned cut lines 14' and 16'. The ends of cut lines 13' and 14' terminate at fold line 8' and the ends of cut lines 15' and 16' terminate at fold line 7'. The interrupted cut line 17' extends diametrically between the arcuate cut lines 11' and 12' and defines the separable wing portions 19' and 20'. A pair of cuts 21' are provided along each of the fold lines 7' and 9' to facilitate bending of the material along these fold lines.

The strip is assembled into a collapsed individual clip in the manner illustrated in Fig. 9. Adhesive *g* is first applied to each of the glue flaps 8 and 8'. One end of the blank is folded about the fold line 5 and the glue flap 8 is adhesively secured to the inside face of the main side section 1 to provide a collapsed box formation *b*. The other end of the strip is folded about fold line 5' and the glue flap 8' is adhesively secured to the inside face of the main side wall section to provide a collapsed box formation *b'*. The box formations *b* and *b'* may then be partially erected as shown in Fig. 10, the prongs *p* of the tube pressed against the wing portions 19 and 20 to

collapse the same inwardly as illustrated in Fig. 11 and permit the base *s* of the tube to rest against the inner end wall section 6. The head end of the tube is pressed against the wing formations 19' and 20' so as to collapse these wings inwardly and to permit the shoulder portion *r* of the tube to rest against the inner end wall section 6'. The tube *T* is thus suspended between the inner end wall sections 6 and 6' of the box formations *b* and *b'* respectively. Since both box formations are identical in design, the tube may be reversed in position.

The outer sleeve of the individual carton is formed from a single blank of paperboard material as shown in Fig. 8 and comprises four side wall panels 30, 31, 32 and 33 which may be substantially equal in width and are defined by parallel extending fold lines 34. A glue flap 35 is hinged to side wall panel 33 along fold line 36 and when adhesive is applied thereto it may be joined to the free side edge of the side wall panel 30 to provide a sleeve of substantially square cross-section. The sleeve shown in Fig. 8, however, can be shipped to the radio tube manufacturer in collapsed form so as to occupy minimum shipping and storage space. A turn-in flap 37 is hinged to the upper end of each of the side wall panels 30 and 32 along the fold line 38. A closure flap 39 is hinged to the upper end of side wall panel 33 along the fold line 40. The closure flap 39 is provided with a tuck-in flap 41 hinged thereto along the fold line 42. The closure flap 39 may be provided with an inspection opening 43 through which the tube-indicating number 45 imprinted on the outer end wall section 3' may be seen when the individual clip is inserted into the outer sleeve. The erected individual clip with the tube *T* supported therein is inserted base end first into the top end of the expanded outer sleeve in the manner more particularly illustrated in Fig. 11. Preferably the loaded clip is so inserted that its main side wall section 1 will lie adjacent the inside face of the side wall panel 31 of the outer sleeve. The box formations *b* and *b'* are so shaped as to snugly fit within the expanded outer sleeve.

The base end of the loaded clip is telescoped into the sleeve until the upper box formation *b'* has been partially inserted. The flaps 37 on the outer sleeve are then tucked into the open sides of the box formation *b'* between the outer end wall section 3' and the inner end wall section 6', as illustrated more particularly in Fig. 13. The loaded individual clip is then further telescoped into the outer sleeve until the inside face of the outer end wall section 3' comes to rest upon the intumed flaps 37.

When this point has been reached, one corner of the lower end of box formation *b* will come to rest upon a corner brace formation 50, as illustrated more particularly in Figs. 12, 13, 14 and 16. The brace formation 50, as shown more particularly in Fig. 8, is formed by providing a transverse cut 51 which traverses the fold line 34 which defines adjacent panels 32 and 33, the cut 51 extending at right angles to the intersected fold line 34. A tapered fold line 52 extends from each end of the cut 51 to the lower edge of the adjacent side wall panels 32 and 33. When the outer sleeve is assembled in erected tubular form, the corner brace portion 50 can be buckled inwardly, as illustrated in Fig. 12, so that its upper edge 53 provides a support for the lower corner of the box formation *b* which is opposite to the main side wall section 1 of the individual clip.

The box formation *b* is thus rigidly supported in rectangular form and is prevented from swinging out of the lower end of the outer sleeve.

The box formation *b'* at the upper end of the outer sleeve is rigidly held in position by the intumed flaps 37 on the outer sleeve, which also serves to hold the main side wall section 1 of the clip in fixed position therein. The closure flap 39 is swung down to overlie the outer end wall section 3' of the clip and the tuck-in flap 41 is inserted into the outer sleeve between the side wall panel 31 of the outer sleeve and the main side wall section 1 of the clip.

It will be noted that when the closure flap 39 is in closed position, the number and identity of the tube contained within the carton is clearly visible through the opening 43 of the closure flap 39, since the tube identification mark 45 is imprinted upon the outer end wall section 3 of the clip directly in line with the opening 43. Thus the identifying number of the tube need be imprinted only upon the outer end wall section 3' of the loaded clip, permitting the use of the same unmarked outer sleeve for variously marked clips.

Since the central prong *p* of most radio tubes can withstand a considerable blow or shock without resulting damage to the tube, it is possible to permit the base *s* of the tube to extend through the opening in the inner end wall section 6 of box formation *b*, as illustrated in Figs. 16 and 17, so that the end of the center prong *p* is adjacent to or substantially rests against the outer end wall section 3. This arrangement permits a shortening of the main side wall section 1 of the clip with a resulting saving in the paperboard used. The more delicate head end *h* of the tube is nevertheless fully protected and is retained in spaced relation from the outer end wall section 3' of box formation *b'*, and the body portion 40 of the tube is also retained in spaced relation from the main side wall section 1 and the enclosing walls of the individual outer carton or the parts of the adjacent clip if stacked in a shipping case.

In individual packaging, the outer tubular sleeve, as shown in Fig. 13, may also be shortened to effect a further saving in paperboard by permitting the outer end wall section 3 of box formation *b* to assume the inclined or tilted position illustrated in Fig. 17. In this arrangement the side wall panels of the outer tubular sleeve will be substantially the same length as the shortened main side wall panel 1 of the clip.

It will now be appreciated that gang clips have been provided for the packaging of delicate radio tubes, which can be manufactured at the lowest possible cost, which can be loaded at high speed by the inspecting and testing operator, and which can be packed in a shipping case of suitable size in a manner to suspend each of the individual tubes and protect the tubes from damage resulting from rough handling of the shipping case. The loaded gang clips can be stacked one upon the other and held in stock to be packed at any time in the future as shipping demands require. The delicate tubes are thereby also protected from damage during storage.

If the trade requires an individual package for the tube the gang clip can be broken into its individual clip segments, a tube loaded into each individual clip, and the clip telescoped into a tubular outer sleeve which when closed as above described retains the tube suspended in the outer sleeve with the delicate tube spaced from all of the side wall panels of the outer sleeve and the

ends of the tube supported in resilient box formations b and b' with the head end or both ends protectively spaced from the outer end wall sections 3 and 3' of the clip. Thus a highly economical individual package for a radio tube is provided which protects the tube against damage, which meets all shipping and handling requirements and which provides a convenient and attractive package.

While certain novel features of the invention have been disclosed and are pointed out in the annexed claims, it will be understood that various omissions, substitutions and changes may be made by those skilled in the art without departing from the spirit of the invention.

What is claimed is:

1. A strip of paperboard material adapted to form a clip for supporting a radio tube or the like including, a main side wall section, an outer end wall section hinged to each end of the main side wall section, a reduced side section hinged to the end of each outer end wall section, an inner end wall forming section connected by a transversely extending hinging score line to the end of each reduced side wall section, and a securing flap connected by a transversely extending hinging score line to the end of each inner end wall section and adapted to be secured to said main side wall section, each of said inner end wall sections having cut therein a pair of resilient deflectable flaps adapted to be separated to provide an opening in the inner wall section to receive an end of the radio tube, the free ends of said flaps being adapted resiliently to bear against the end of an inserted tube, the hinging score lines which define the ends of each of said inner end wall sections having cuts therein of sufficient length to make said score lines less resistant to bending than the intermediate inner end wall section.

2. A blank of paperboard material adapted to form a gang clip for supporting a plurality of radio tubes or the like including, a main side wall section, an outer end wall section hinged to each end of the main side wall section, a reduced side section hinged to the end of said outer end wall section, an inner end wall forming section connected by a transversely extending hinging score line to the end of each reduced side wall section, and a securing flap connected by a transversely extending hinging score line to the end of each inner end wall section and adapted to be secured to said main side wall section. each of said inner end wall sections having cut therein a pair of resilient deflectable flaps adapted to be separated to provide an opening therein, each opening adapted to receive one end of a radio tube, between the free ends of the deflected flaps resiliently bearing against the end of an inserted tube, the hinging score lines which define the ends of each of said inner end wall sections having cuts therein of sufficient length to make said score lines less resistant to bending than the intermediate inner end wall section.

3. A blank of paperboard material adapted to form a gang clip for supporting a plurality of radio tubes or the like including, a main side wall section, an outer end wall section hinged to each end of the main side wall section, a reduced side section hinged to the end of said outer end wall section, an inner end wall forming section connected by a transversely extending hinging score line to the end of each of said reduced side wall sections, and a securing flap connected by a transversely extending hinging score line to the

end of each inner end wall section, said securing flaps being secured to said main side wall section, each of said inner end wall sections having a plurality of spaced openings therein, each opening adapted to receive one end of a radio tube, the hinging score lines which define the ends of each of said inner end wall sections having cuts therein of sufficient length to make said score lines less resistant to bending than the intermediate inner end wall section, said blank having a severable line of weakness extending longitudinally across the full length of the blank between each adjacent pair of openings whereby said blank may be separated into one or more tube supporting strip segments.

4. A collapsible clip for supporting a radio tube or the like including, a main side wall section, an outer end wall section hinged along a transverse score line to each end of the main side wall section, a reduced side section hinged along a transverse score line to the end of each outer end wall section, an inner end wall forming section hinged along a transverse score line to the end of each reduced side wall section, a securing flap hinged along a transverse score line to the end of each inner end wall section secured to said main side wall section, said reduced side wall section and said inner and outer end wall sections at each end of the main side wall section being erectable to provide a tube-supporting box formation at each end of said main side wall section, each of said inner end wall sections having a pair of resiliently deflectable flaps cut therein adapted to be separated to provide an opening for receiving one end of a tube between the free ends of the deflected flaps, the hinging score lines which define the ends of each inner end wall section having cuts therein of sufficient length to make said score lines less resistant to bending than any transverse part of the inner end wall section between its end defining score lines.

5. A collapsible gang clip for supporting a plurality of radio tubes or the like including, a main side wall section, an outer end wall section hinged along a transverse score line to each end of the main side wall section, a reduced side section hinged along a transverse score line to the end of each outer end wall section, an inner end wall forming section hinged along a transverse score line to the end of each reduced side wall section, a securing flap hinged along a transverse score line to the end of each inner end wall section the securing flap being secured to said main side wall section, said reduced side wall section and said inner and outer end wall sections at each end of the main side wall section being erectable to provide a tube-supporting box formation at each end of said main side wall section, a pair of resilient deflectable flaps cut in said inner end wall sections to provide openings adapted to receive one end of a tube between the free ends of said deflected flaps, the hinging score lines which define the ends of each of said inner end wall sections having cuts therein of sufficient length to make said score lines less resistant to bending than any transverse part of the inner end wall section between its end defining score lines.

6. A collapsible paperboard gang clip adapted to provide a support for a plurality of radio tubes or the like including, a main side wall section, a pair of erectable box formations extending from the end portion of said main side wall section and spaced apart to receive radio tubes therebetween, each of said box formations including

spaced inner and outer end wall sections connected by hinge lines to said main side wall section and a reduced side wall section connected by hinge lines to said inner and outer end wall sections, the inner end wall section of each of said box formations having a plurality of pairs of resiliently deflectable flaps cut therefrom adapted to be separated to form tube-receiving openings, the hinge lines which define each of said inner and wall sections having weakening cuts therein 10

5 to reduce their resistance to bending to the point where said box formations may be moved from collapsed position to erect position by applying pressure to the ends of said collapsed box formations without distortion of the inner end wall sections, the gang clip being subdivided by severable perforated lines into individual strips, each strip being adapted to receive one tube.

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