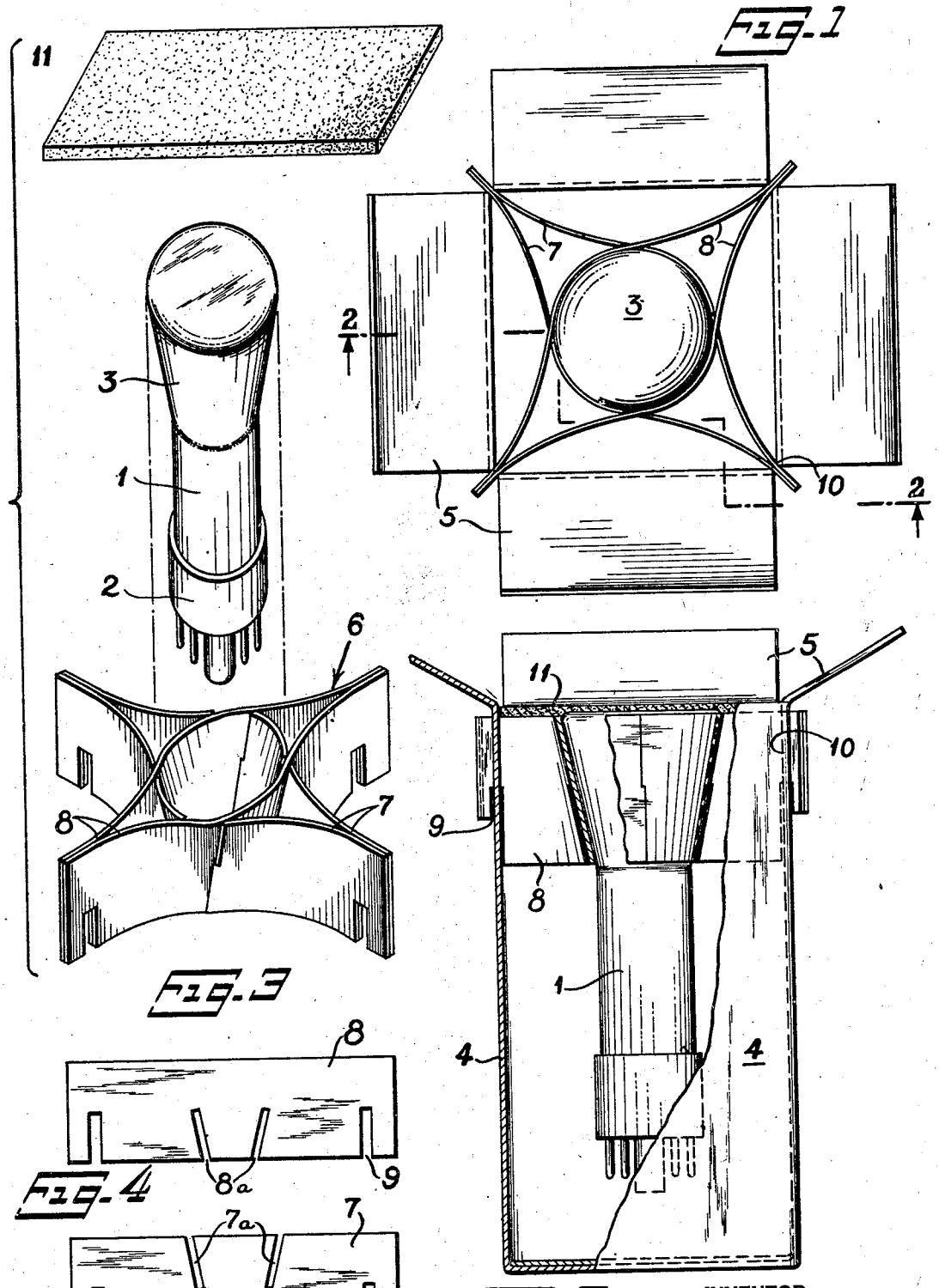
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CARTON

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CARTON

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My invention relates to containers or cartons for protecting fragile articles, such as radio tubes, cathode ray tubes and the like from injury caused by shock during shipping or handling.

Common methods of protecting a fragile article during shipment are to simply pack the article in wadding within a container, or to support the article in a container upon platforms, the edges of the platforms being fastened solidly to the articles and to the inner walls of the container. Such cartons are costly to make, assemble and pack, and are impractical for packing large and heavy radio tubes since the supporting platforms, to be sufficiently rigid to support the tubes from the sides of the container, are usually so stiff as to transmit damaging shocks to the tubes.

An object of my invention is a carton for fragile articles and devices that will firmly yet yieldingly secure the device in the carton so that shocks cannot be transmitted to the device.

A further object of my invention is a carton that is easy to assemble, pack and seal, and that is mechanically strong and inexpensive to manufacture.

The characteristic features of my invention are defined in the appended claims and one embodiment thereof is described in the following specification and shown in the accompanying drawing in which Figure 1 is an end view and Figure 2 is a side view, partly in section, of my improved carton, Figure 3 is an exploded view of a cathode ray tube and one of my improved supporting cradles for the tube, and Figures 4 and 5 are detailed views of the straps employed in fabricating my novel cradle.

The particular carton shown in the drawing is specifically constructed for housing a cathode ray tube comprising a cylindrical glass neck portion 1 containing a relatively heavy electrode or electron gun structure, base 2, and a conical glass bulb 3. The outer container, comprising a tubular box with rectangular sides 4 and end flaps 5, receives the cathode ray tube which is supported yieldingly yet firmly centrally within the box.

According to the illustrated embodiment of my invention, the cathode ray tube is supported solely by its conical bulb portion, the heavy base end of the tube, containing the delicate electrode assembly, being suspended out of contact with the sides and end of the box. Any blow or shock delivered to the side of the box in handling or shipping cannot be transmitted as a hard blow to the base end of the tube, because the base is free to swing any direction a limited distance from its normal center position. The novel means for supporting the tube comprises a cradle 6 consisting of a plurality of latticed or interlaced straps or partition pieces 7 and 8 extending diagonally across the end of the box. The straps preferably are in width about equal to the slant height of the conical bulb it is to support, and the end edges are disposed parallel to the corners of the box and are attached to the corners. One convenient means of attaching the ends of the straps to the box corners is by notches 9 in the side edges adjacent the ends of the straps and cooperative notches 10 in the corners of the box at one end of the box. Preferably the straps are arranged in two pairs, where the box is four-sided, and each strap is notched at the cross-over points to provide spaced complementary slots 7a or 8a extending about half way across each strap, preferably one pair of straps being notched in the top edges while the other pair is notched in the lower edges, as shown in Figures 4 and 5. Where the bulb to be held is conical, as here, the spaced complementary notches are inclined at the proper angle to twist and spring the straps to form a tapered holder or cone-shaped surface that will snugly fit the cone-shaped bulb. The four straps are assembled to form the suspension cradle shown in Figure 3, which is slipped into the end of the box as shown in Figure 2, with the strap end notches hooked into the box corner notches, and the bulb of the cathode ray tube is dropped into place. No sponge packing material or wadding around the bulb is required. A pad 11, however, is preferably laid over the upper end of the bulb before the end flaps of the box are folded over and sealed.

According to a further feature of my invention the box is fabricated in such a way as to particularly adapt it for assembly with my cradle 6. Conventional four-sided boxes have a seam along one corner closed with heavy cloth glue tape. It has been found impractical to place notch 10 in the end of a taped corner joint because of the difficulty of controlling the depth of the notch by the end of the cloth tape, and because of the difficulty, with standard gluing machines, of terminating the tape short of the end of the box. According to my invention the seam is made along one of the side panels, preferably along the center of the panel. The edges of the box stock are butted and a flat strip of cloth tape is glued over the butt joint. The four notches 10 may then be cut from the flat box

stock to a uniform depth which insures perpendicular placement of the cradle straps across the end of the box and central suspension of the cathode ray tube in the box. One box material found to be strong and light in weight is fiber board, commercially known as 200 test, 8 flute. jute-and-jute corrugated box board.

The straps of the cradle conveniently may be made of commercial fiberboard or cardboard, relatively stiff. Fiberboard .04 inch thick is strong enough to support the standard cathode ray tube having 2, 3 or 5 inch diameter bulbs 3. The cathode ray tube is yieldingly secured centrally in the box and the small heavy end of the tube containing the fragile electrodes is effectively held from the sides of the box regardless of the position in which the box may be handled and stacked. A blow from any side of the box is absorbed by the swing of the base of the tube a short distance. If the swing of the base is found to be excessive, the bulb 1 may be tightened in its cradle merely by applying more pressure to the large end of the bulb as by increasing the thickness of the pad under the closed end flaps of the box.

My improved container is easy to assemble, pack and seal and is mechanically strong and inexpensive to manufacture.

I claim:

1. A container for fragile articles comprising an outer tubular box, an inner article supporting cradle comprising two pairs of flat, thin straps of a width less than the depth of said box extending across the top of said box edgewise to the ends of the box and crossed intermediate their ends, each of said straps having in one edge and intermediate its ends a pair of spaced notches, said straps being interlocked by said notches at their intersections to make the portions of said straps between said notches the sides of an article holder, and means for securing the ends of each pair of straps to the sides of said box near the top to suspend said cradle in said box.

2. A container for fragile articles comprising a tubular box rectangular in cross-section, an inner article suspension cradle comprising a pair of flat, thin straps of cardboard set edgewise and side by side with a pair of spaced notches in the corresponding edges of said straps intermediate their ends, a second pair of similar straps extending across and interlocked with said first pair by the complementary notches in the edges of said pairs of straps to form an article holder with sides edgewise to the ends of the box and consisting of the portions of said straps between said notches, and means for attaching the ends of each pair of straps to opposite corners of said box.

3. A container for fragile articles having a cone-shaped bulb coaxial with a tubular neck, comprising a tubular box with four rectangular sides, a joint along one side removed from the corner, notches in the corners of the box extending along the corners from one end of the box, an inner article-supporting cradle, said cradle comprising two pairs of straps, said straps being crossed and extending diagonally across the end of the box and having notches in their side edges adjacent the end edges of the straps, said straps having complementary spaced slots in the side edges of the straps so that the straps may be interlaced to provide an enclosing recess for said article, and the interlaced straps being held in the end of said box with the end notches of the straps hooked into the corner notches of the box.

4. A container for fragile articles having a cone-shaped bulb coaxial with a tubular neck, comprising a tubular box with four rectangular side panels, the panels being integrally joined at the box corners, notches in said corners extending along the corners from one end of the box, an inner article-supporting cradle, said cradle comprising a plurality of straps, said straps extending diagonally across the end of the box and having notches at their ends hooked into the box corner notches, said straps having complementary spaced slots in the side edges of the straps so that the straps may be interlaced to provide an enclosing recess for said article.

5. A container for fragile articles comprising an outer tubular box, an inner article suspension cradle comprising four flat thin straps edgewise the ends of the box and arranged in two pairs which cross at the middle, each strap of one pair having two inclined notches on the upper edge and each strap of the other pair having on the lower edge two inclined notches which coact with the notches on the upper edges of the other pair of straps to interlock said four straps at the four points of intersection of said straps and space the portions of said straps intermediate said intersections to provide a tapered article holder, each pair of straps having near each end a deep notch for hooking said straps to the box wall near the top of said box.

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