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COMBINATION PACKAGING ASSEMBLY AND PACKAGED ARTICLE

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FIG. 1.

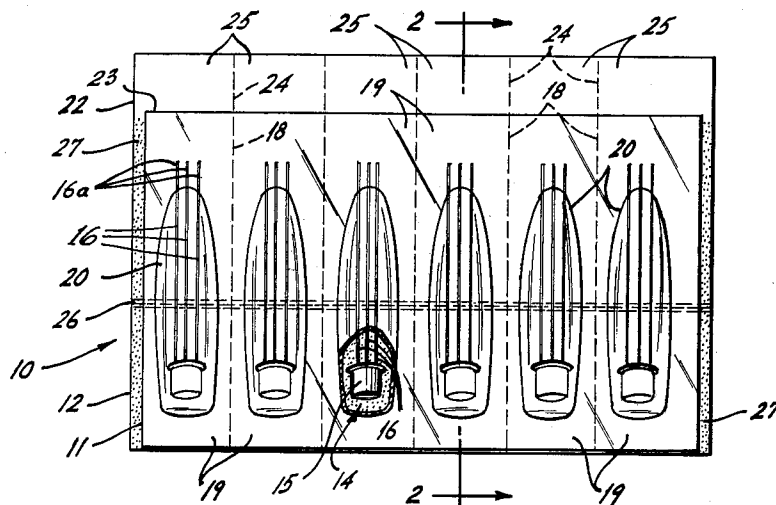


FIG. 2.

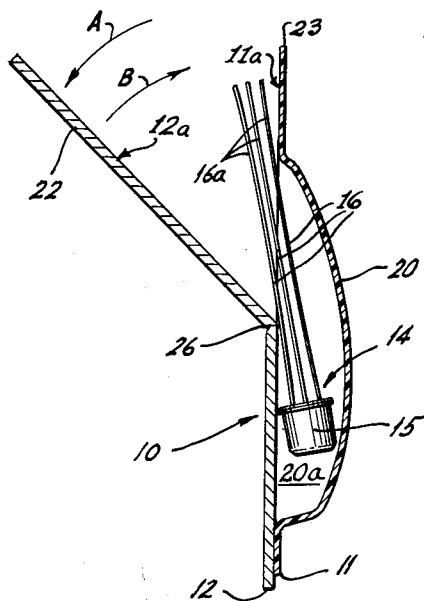
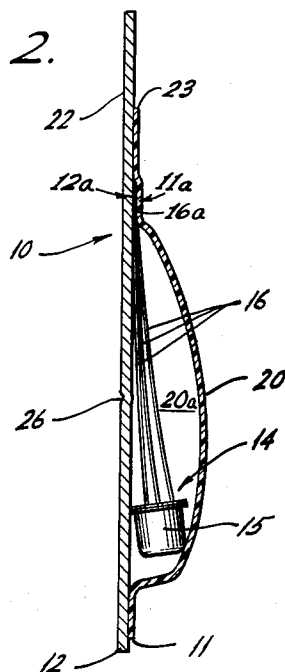


FIG. 3.

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1

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COMBINATION PACKAGING ASSEMBLY AND PACKAGED ARTICLE

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2 Claims. (Cl. 206—56)

The present invention relates to containers, and more particularly to a novel package construction for containing miniature electronic components such as transistors, diodes, and similar devices consisting of a body having leads which extend therefrom.

Because of the small and delicate nature of components of the kind mentioned above, it is of importance that they be handled with care so as not to damage their fine wire leads, as well as to obviate undue shocks and vibrations which can have deleterious effects on such components. Handling difficulties and problems arise mainly in packaging components for merchandising purposes, and it is a primary object of this invention to overcome these difficulties and problems by providing an improved package assembly which does away with excessive and repeated manipulation of the components.

Toward realization of this primary object, the invention provides an arrangement which, while adapted for adequately housing and properly protecting packaged components, is capable of clearly displaying each component for identification and examination. Thus the invention makes it possible to identify and ascertain the type of the packaged components without direct handling thereof.

It is also an object of the invention to provide a packaging arrangement which, while adapted to contain several components of the kind referred to, insures positive retention of the components separately and apart from each other, thereby preventing entanglement between individual components.

The invention is specifically characterized by the fact that it provides a packaging structure which is well suited for use with an automatic component-feeding machine, and which is further capable of being readily manipulated so that sections thereof containing components to be used, can be opened for easy removal of such components without disturbing the remaining packaged components.

The particular and preferred embodiment of the present invention, which is illustrated in the accompanying drawing, utilizes companion sheet members arranged to confront each other and cooperating to form a packaging assembly adapted to receive and enclose components, specifically semiconductor devices, therebetween. The confronting sheet members are divided into narrow separable sections, one section for each packaged component, so that one or more of said sections with the enclosed component or components, can be removed from the packaging assembly. The confronting sheet members are so constructed that a portion of the packaging structure can be opened for insertion and removal of the components. Moreover, the sheet members are constructed and arranged in such manner that part of the wire leads of the enclosed components become fixedly sandwiched between the confronting sheets to anchor the packaged components and prevent their displacement in the packaging assembly.

The nature of the invention and its mode of operation, as well as its objects and features, will be fully understood from the following description based on the accompanying drawing, in which:

2

FIGURE 1 is a front elevational view showing a packaging assembly constructed in accordance with the principles of the present invention, one of the transparent component-housing portions being shown partly in section better to illustrate the component contained therein;

FIGURE 2 is an enlarged sectional view taken substantially on line 2—2 of FIGURE 1 and illustrating a packaged component in side elevation; and

FIGURE 3 is a view similar to FIGURE 2 but showing portions of the confronting sheet members separated from each other to provide for insertion or removal of the component.

Referring more particularly to the drawing, there is illustrated a packaging assembly 10 which comprises companion sheet members 11 and 12 disposed one over the other. These sheet members are constructed and arranged so as to house and retain articles therebetween. Although capable of other uses, the packaging structure of the invention is specially advantageous when employed to package electronic components 14, such as transistors or similar semiconductor devices, having a generally cylindrical or tubular main body 15 and elongated wire leads 16 extending from one end of said body and terminating in free end portions 16a.

As shown in the drawing, the first sheet member 11 is of generally rectangular configuration and is divided by means of parallel score lines 18 into a plurality of elongated sections or strips 19. This sheet 11 is made of transparent semi-rigid material and has series of elongated bulging pockets 20 which cooperate with the other or backing sheet member 12 to define a space 20a for accommodating the components 14 which are visible through said material. The pockets 20 as seen in FIGURE 1 are disposed in spaced parallel positions so that there is provided one pocket in each strip 19. Preferably the member 11 is shaped from suitable clear plastic, such as cellulose acetate, polystyrene or similar material, the component-receiving pockets 20 being produced in accordance with conventional thermal plastic-molding procedures.

The second sheet member 12 is also of generally rectangular configuration, and is so dimensioned that the transparent first sheet member 11, as clearly seen in FIGURE 1, fits within the marginal delineation of said second sheet member which has a major portion 22 extending beyond the corresponding marginal edge 23 of said first sheet member 11. The second sheet member 12 is made of relatively stiff paperboard and has a series of parallel score lines 24 spaced to divide said sheet member 12 into a plurality of sections or panels 25. The score lines 24 of the sheet member 12 are disposed to coincide with the score lines 18 of the transparent first sheet member 11 so that when said sheet members are arranged face-to-face the associated strips 19 and panels 25 constitute individual package units, each enclosing a component 14 and capable of being individually separated by tearing along the score lines aforesaid.

The two companion sheet members 11 and 12 are adhesively united face-to-face and are adapted to be peeled apart thereby opening the package units and giving access to the packaging pockets 20. For that purpose, the backing paperboard member 12 is provided with a longitudinal crease line 26 along which the major portion 22 of the said paperboard member may be swung outwardly with respect to the transparent sheet member 11, as is represented in FIGURE 3 of the drawing. In this manner the two sheets can be separated one with respect to the other thus opening the pockets 20 for insertion of components 14 in or for removal of such components from said pockets. It will be noted that the crease line 26 extends longitudinally throughout the length of the sheet 12 and

across the elongated pockets 20 in the sheet member 11, so that approximately one half of each pocket is uncovered by opening displacement of the major portion 22 of the sheet member 12, while the remaining half of each pocket remains covered by the remaining portion of said member 12.

In practice, proper adhesion between the sheet members 11 and 12 is accomplished by coating the backing paperboard member 12 with a thin layer 27 of conventional heat sealable material which forms an invisible bond between said members when subjected to heat and pressure.

In constructing the packaging assembly described above, the two preformed sheet members 11 and 12 are first adhesively united at their portions which lie below the crease line 26 as viewed in the drawing. The portions of said members which lie above said crease line 26 remaining free from each other so that, as seen in FIGURE 3, the upper portion 22 of the backing paperboard member 11 can be swung outwardly as represented by the arrow A to permit insertion of the components into the pockets 20. Insertion can be accomplished automatically by feeding strips of the open packaging assembly past an insertion head of a suitable machine.

As represented by arrow B, said portion 22 of sheet member 12 is then swung inwardly and brought into contact with and sealed to the corresponding portion of the transparent sheet member 11, so that said members 11 and 12 form a unitary structure in the manner seen in FIGURE 2. As more clearly appears in FIGURE 2, the free end portions 16a of the wire leads 16 become sandwiched and fixedly anchored between portions 11a and 12a of the two sheet members 11 and 12, respectively, so that said leads effect rigid retention of the components 14 within their respective pockets 20.

From the foregoing description, it will be appreciated that the components 14 are protectively sealed within the package assembly until the latter is opened to give access to the components which are to be used. To open the package assembly, it is only necessary to grasp and peel the portion 22 of the paperboard member 12 away from the confronting portion of semirigid sheet member 12. By reason of the coinciding score lines 18 and 24 in the respective members 11 and 12, the desired number of package units can be separated from the assemblage without disturbing the remaining units. In that event, the units are separated prior to opening the pocket or pockets 20 so that the components which are not to be used remain effectively sealed.

It will be appreciated that the invention, while shown

in its preferred embodiment, is not limited to specific structures of that embodiment, but embraces such changes and variations as come within the scope of the subjoined claims.

What we claim is:

1. In combination, a packaging assembly and a packaged article of the type having a main body portion with elongated generally parallel wire leads extending from one side thereof and terminating in free end portions, said assembly comprising a pair of sheet members arranged face-to-face with surfaces in contacting engagement, and a pocket provided in one of said sheet members and cooperating with the other of said sheet members to define an article-receiving space, said article being disposed within said pocket with its body portion occupying said space and with said free end portion of its leads extending beyond said pockets and being sandwiched and fixedly anchored between portions of said surfaces.

2. In combination, a packaging assembly and a packaged article of the type having a main body portion with elongated generally parallel wire leads extending from one side thereof and terminating in free end portions, said assembly comprising a pair of sheet members arranged face-to-face with surfaces in contacting engagement, a pocket provided in one of said sheet members and cooperating with the other of said sheet members to define an article-receiving space, and a crease line provided in the other of said sheet members to extend across said pocket, said article being disposed within said pocket with its body portion occupying said space and with said free end portion of its leads extending beyond said pocket and being sandwiched and fixedly anchored between portions of said engaging surfaces, said crease line dividing said other of said sheet members into two portions, one of said two portions being adapted to swing on said crease line to uncover that part of said pocket which lies to one side of said crease line and thereby free said end portions of said leads from between said sheet members while the other of said two portions remains in engagement with said one of said sheet members to cover that part of said pocket which lies to the other side of said line and thereby maintain said body portion of said article between said sheet members.

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