Feb. 22, 1966 M. ABESON 3,236,007

DEFORMABLE FIGURE TOY OF LAMINATED SHEET MATERIAL

Filed June 6, 1963

FIG. 1

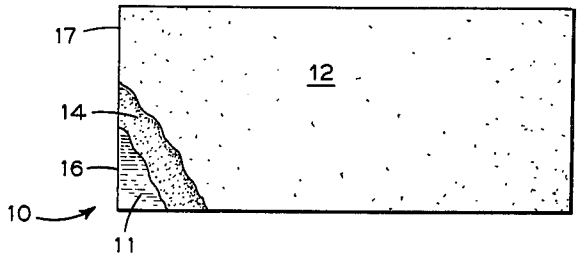


FIG. 2

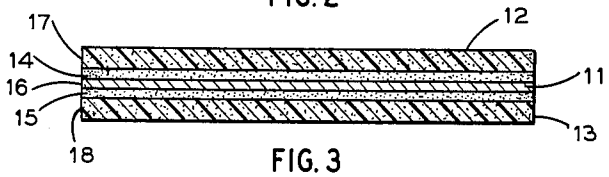


FIG. 3

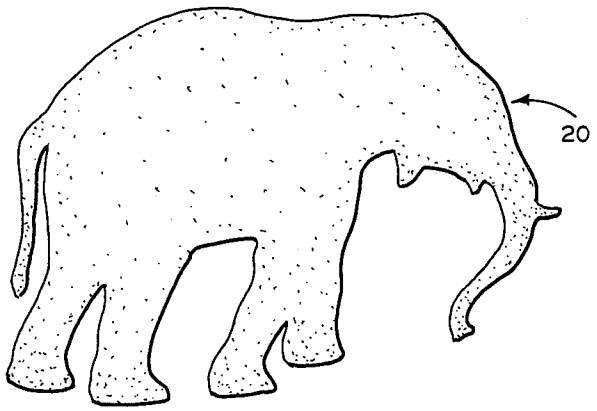
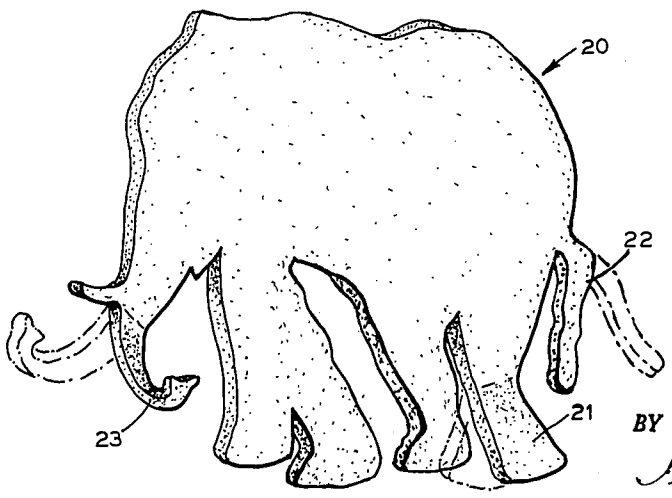


FIG. 4



INVENTOR.

Marion Abeson

BY Irving Seidman

ATTORNEY

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DEFORMABLE FIGURE TOY OF LAMINATED SHEET MATERIAL

Marion Abeson, 46 W. 83rd St., New York 24, N.Y.

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This invention relates to toys, and more particularly concerns flat figures which lend themselves to repeated deformation so as to assume a variety of desired three dimensional shapes.

Since flat toy forms such as a doll, animal or the like which can be bent or deformed as desired by the child playing with the same, affords greater interest and pleasure than toy figures which are fixed as to their shape; it has been attempted to provide two dimensional figures which by reason of their structure, lend themselves to deformation or bending so as to retain a desired shape, the bending being repeatable as desired to change the shape of the figure.

In a number of cases, a wire core structure is embedded in a covering of rubber or other flexible material which has the general outline of a doll or the like. While such a toy lends itself to bending from an original two dimensional form to a three dimensional shape, since the core is not coextensive with the covering in respect to their respective surface areas, the bending action gives very limited possibilities in the way of desired three dimensional configurations. It will be apparent that many intricate relationships of adjacent portions of the figure cannot be attained with the wire core type of toy.

It has also been suggested that relatively thick core members of soft metal or metal alloy be embedded in a relatively thick covering of flexible material such as sponge rubber. Such construction has also been found to have rather limited possibilities insofar as converting the same from its normal two dimensional shape to a desired, sculpture like three dimensional shape is concerned. Thus, the original figure cannot be bent to provide intricate detail in limited surface areas so as to convey a desired symbolism of the toy being manipulated.

Accordingly, an object of this invention is to provide improved toys of the deformable type wherein the toy is formed of laminated materials including metal foil and facings therefor; the resultant structure lending itself to bending or deformation over extended or limited surface areas to attain sculpture like, three dimensional details in the deformed figure.

Another object of this invention is to provide an improved figure toy which may be derived from laminated stock in an economical manner, utilizing low cost, die cutting procedures whereby the finished toy may be produced at low cost, yet provides a finished product having enhanced utility.

A further object of this invention is to provide an improved figure toy which lends itself to ready deformation by a child so as to assume a wide variety of three dimensional shapes as desired; such figure toy inluding a metal foil core of an area coextensive with covering sheets for the foil core; the thickness values of the core and covering sheets being correlated to attain optimum deformation characteristics.

Other objects of this invention will in part be obvious and in part hereinafter pointed out.

In the drawing, FIG. 1 is a plan view of a laminated material used in forming toy figures embodying the invention, with portions broken away;

FIG. 2 is a sectional view thereof;

FIG. 3 is a plan view of a typical toy figure formed therefrom;

FIG. 4 is a perspective view of said figure showing portions thereof in bent or displaced condition.

Essentially, the toy of the instant invention is derived from a laminate made up of sheet metal foil, such as aluminum, which is covered on either surface thereof with a non-metallic material such as polyurethane foam, plastic film, paper or the like. The layers of the laminate are secured together by flexible adhesives having a rubber or other resilient base. The laminate is then die cut to provide figures of desired outline, such as dolls, animals or the like.

As shown in FIG. 1, **10** designates a laminate made up of aluminum foil **11** with facing sheets **12, 13** on either side thereof, secured thereto by thin coatings **14, 15** of rubber adhesive. The facing sheets **12, 13** are of fine pore polyurethane foam.

It has been found that the metal foil **11** should have a thickness of the order of about .004" to about .006" and preferably .005". Also, the polyurethane facing sheets **12, 13** should have a thickness of the order of from about .100" to about .200", and preferably about .125".

The laminate **10** may be die cut to form figures of any desired outline and in all cases, the peripheral edge **16** of the metal foil **11** extends to the corresponding peripheral edges **17, 18** of facing sheets **12, 13**. As the several laminae are well cemented together by adhesive coatings **14, 15** and the action of the cutting dies is to further compress the marginal portions of the facing sheets **12, 13** against the marginal portions of the foil **11**, there is little danger of delamination and exposure of the peripheral edge **16** of metal foil **11**.

It has been found that a specific figure **20**, such as a representation of an elephant, shown in FIGS. 3, 4 may be readily manipulated by the child playing with the same, to bend or deform major or minor surface portions thereof in order to attain a desired three dimensional shape. Not only is the original figure bent out of its original two dimensional shape into a three dimensional form, but retains such specific three dimensional form until bent back to its original flat condition or some other three dimensional shape.

Thus, the leg **21**, the tail **22** or the trunk **23** may be bent out of the flat plane of the figure, as indicated in FIG. 4.

In lieu of polyurethane foam, other flexible porous or cellular facings may be used including sponge rubber, felt, flannel, pile fabric, flocked sheets and the like. Such facing sheets must be capable of flexing with the metal foil repeatedly without delamination and preferably should be of a resilient character so as to avoid wrinkling after repeated bending or deformation.

As various changes might be made in the embodiment of the invention herein disclosed without departing from the spirit thereof, it is understood that all matter herein shown or described shall be deemed illustrative and not limiting except as set forth in the appended claims.

What is claimed is:

1. A toy figure comprising a flat laminate of uniform thickness, said laminate comprising a metal foil means having a thickness of about .005" and facing sheets of flexible, resilient material of a thickness of from about 20 to about 40 times the thickness of said metal foil means, said facing sheets being adhesively secured to the opposite surfaces of said metal foil means, the peripheral edges of said metal foil means and facing sheets being coterminous and corresponding to the outline of said toy figure, said metal foil means rendering said laminate repeatedly deformable out of the plane thereof in limited surface areas thereof to impart selected third dimensional effects to said toy figure.

2. A toy figure as in claim **1** wherein said facing sheets comprise polyurethane foam having a thickness of about .125".

3. A toy figure comprising a flat laminate of uniform

thickness, said laminate comprising a metal foil means having a uniform thickness of from about .004" to about .006" and facing sheets of flexible, resilient material having a uniform thickness of from about .0625" to .125", said facing sheets being adhesively secured to the opposite surfaces of said metal foil means, the peripheral edges of said metal foil means and facing sheets being coterminous and corresponding to the outline of said toy figure, said metal foil means rendering said laminate repeatedly deformable out of the plane thereof in limited surface areas thereof to impart selected third dimensional effects to said toy figure.

4. A toy figure comprising a flat flexible laminate deformable into three dimensional shape, said laminate comprising aluminum foil means of uniform thickness of the order of .005", a facing sheet of polyurethane foam on each surface of said foil means, each facing sheet having a thickness of from about 20 times to 40 times the thickness of said foil means, a flexible adhesive securing the opposed surfaces of said foil means, the peripheral edge of said foil means being coextensive with the peripheral edges of said facing sheets, said aluminum foil means rendering said laminate repeatedly deformable out of the plane thereof in limited surface areas thereof to impart selected third dimensional effects to said toy figure.

5. A toy figure comprising a flat flexible laminate deformable into three dimensional shapes, said laminate comprising aluminum foil means of uniform thickness of from about .004" to about .006", a facing sheet of porous, flexible, resilient material adhesively secured to each surface of said foil means, each facing sheet having a thickness of from about .0625" to about .125", the peripheral edge of said foil means extending to the peripheral edges of said facing sheets at all points in the peripheral outline of said figure, said aluminum foil means rendering said laminate repeatedly deformable out of the plane thereof in limited surface areas thereof to impart selected third dimensional effects to said toy figure.

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RICHARD C. PINKHAM, *Primary Examiner.*