Nov. 28, 1961 G. S. ENGLAND 3,010,246

SELF-FORMING DEVICE

Filed April 20, 1959 2 Sheets-Sheet 1

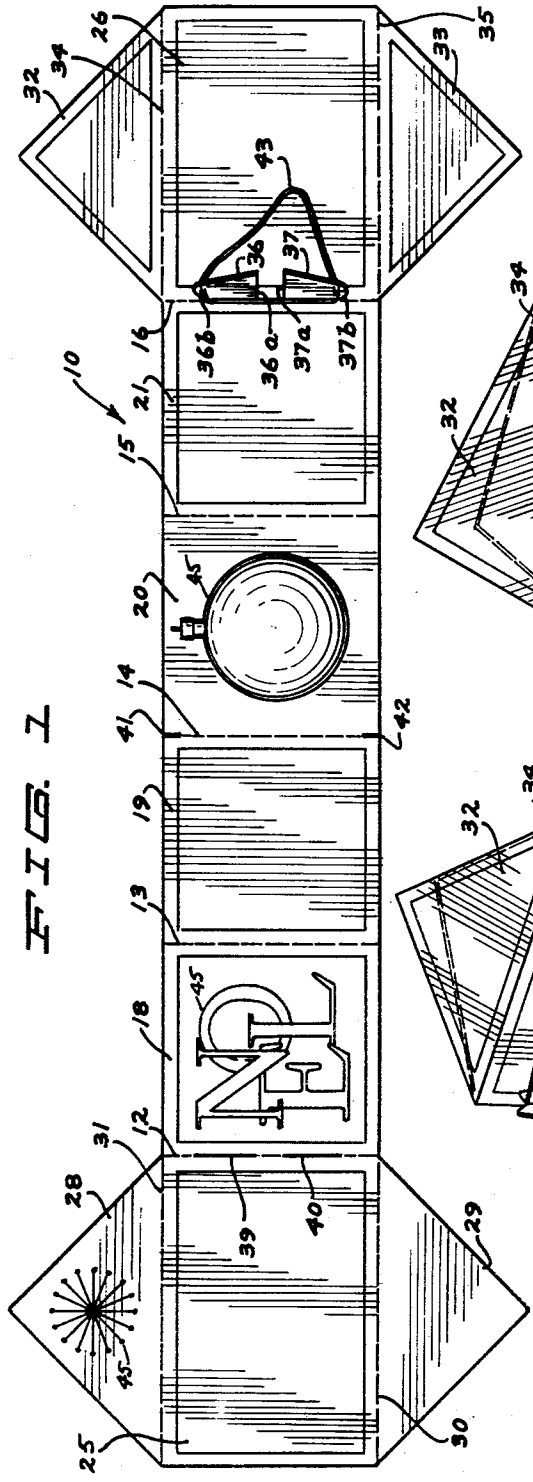


FIG. 1

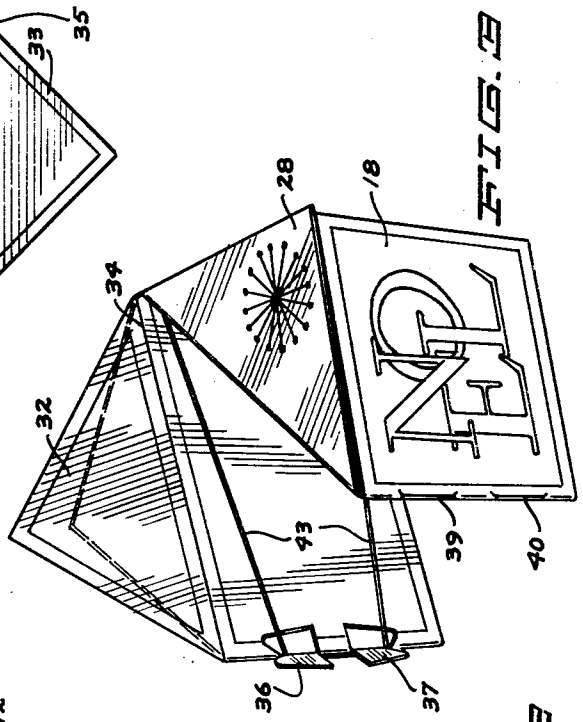


FIG. 3

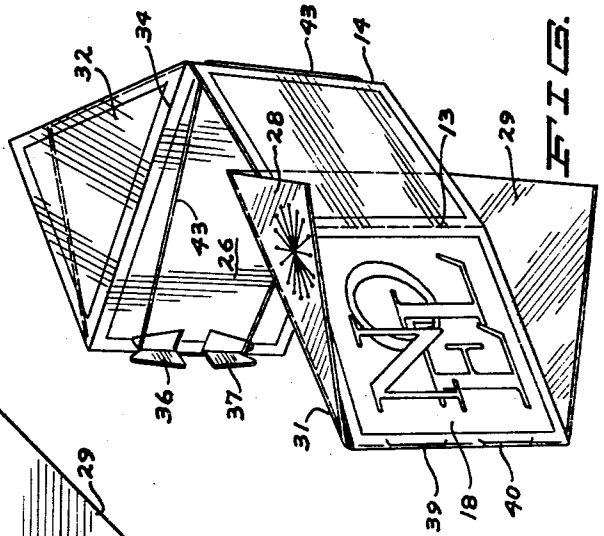


FIG. 2

INVENTOR.
GEORGE S. ENGLAND
BY Reifand Gregory
ATTORNEYS

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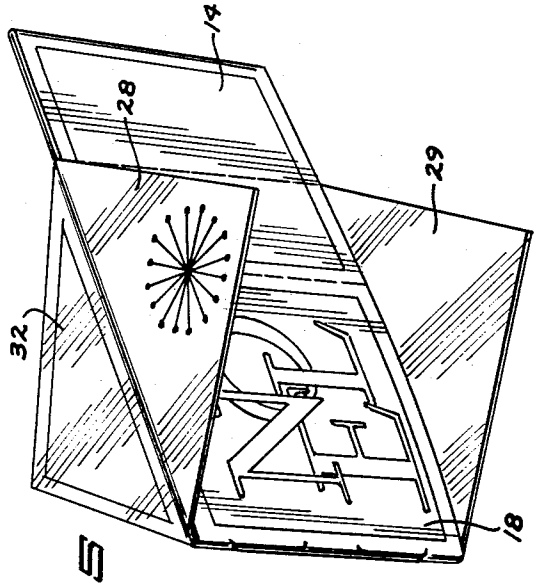


FIG. 5

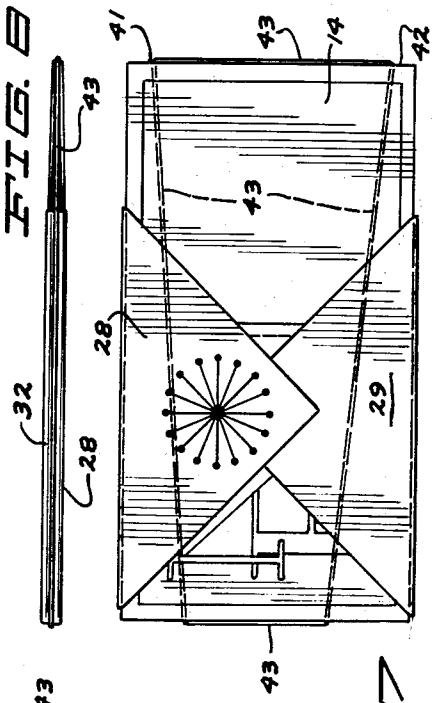


FIG. 8

FIG. 7

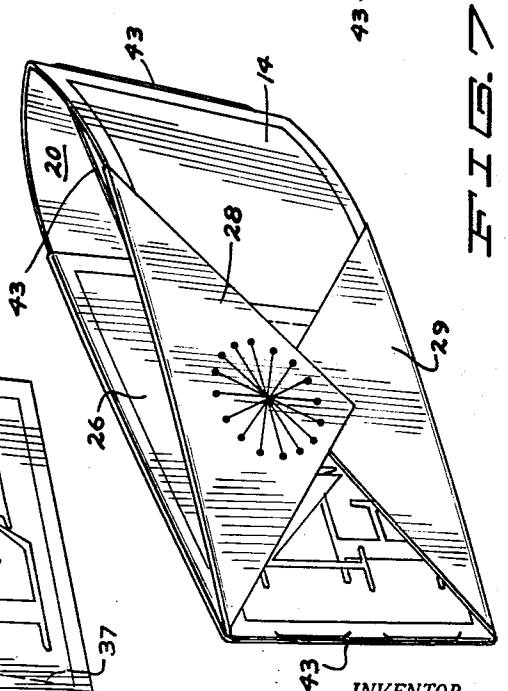


FIG. 6

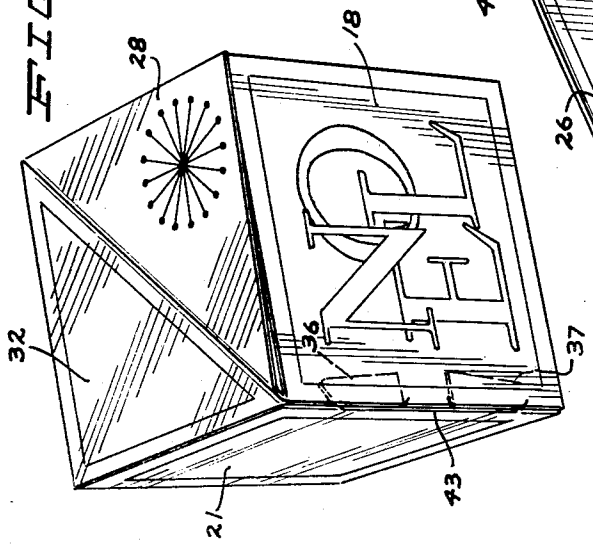


FIG. 4

INVENTOR.
GEORGE S. ENGLAND
BY Reifand Gregory
ATTORNEYS

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3,010,246
SELF-FORMING DEVICE

George S. England, Minneapolis, Minn., assignor to England Press, Inc., Minneapolis, Minn., a corporation of Minnesota

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2 Claims. (Cl. 46—1)

This invention relates to a self-forming three dimensional or geometric figure, such as a figure parallelepiped in form. It is desirable to have a novel construction of a figure which may be retained in a flat condition, such as in an envelope, but which upon removal therefrom will automatically spring open to form a figure. It is also desirable to have such a construction whereby various types of irregular figures may be formed in addition to those which may be considered to be regular geometric figures, such as a figure in the form of a cube.

It is an object of this invention therefore to provide a novel construction of a figure adapted to be formed in a flat condition for placement in a container, such as in an envelope, but which upon release therefrom will automatically spring open to form a three dimensional figure, such as one parallelepiped in form or one of an irregular form.

It is a further object of this invention to provide a blank adapted to be scored and folded in flat condition and have an elastic means in connection therewith to automatically cause said folded blank to open up to form a three dimensional figure.

It is also an object of this invention to provide such a figure as is indicated in the previous object, which can be easily collapsed merely by having the sides thereof pressed together.

It is a further object of this invention to provide a blank formed as a strip of sheet material, scoring said blank to be foldable to have side by side portions integrally joined at one end, the free ends of said side portions being removably joined together, said side portions respectively being scored whereby when said side portions are separated in a direction away from one another the sides of an enclosed figure are formed, an elastic band disposed about the joined ends of said side portions to urge said ends in a direction toward one another to cause said sides to separate to form said figure, means carried by said side portions for limiting the separation of said sides and flap portions carried by said sides to form end closures for said figure, said flap portions being of a size greater in area than the end openings of said figure to overlie the same.

These and other objects and advantages of the invention will be fully set forth in the following description made in connection with the accompanying drawings in which like reference characters refer to similar parts throughout the several views and in which:

FIG. 1 is a plan view of a blank of which one form of applicant's device is formed;

FIG. 2 is a view in perspective showing applicant's device in partially formed condition with some portions thereof being shown in dotted line;

FIG. 3 is a view in perspective similar to that in FIG. 2 showing applicant's device in a further assembled condition;

FIG. 4 is a view in perspective showing applicant's device in assembled condition and showing some portions thereof in dotted line;

FIG. 5 is a view in perspective showing applicant's device in partially collapsed condition;

FIG. 6 is a view in perspective of applicant's device showing the elastic means therein urging a separation of the sides thereof;

FIG. 7 is a top plan view of applicant's device in collapsed condition showing some parts thereof in dotted line; and

FIG. 8 is a view in side elevation of applicant's device in collapsed condition.

Refering to the drawings, in which like characters refer to identical parts throughout the several views, and with particular reference to FIG. 1, a blank **10** is shown. Said blank **10** will be made of suitable sheet material and may be variously formed to produce regular or irregular figures. In the embodiment of the invention here disclosed, said blank **10** is shown of a configuration adapted to result in a figure formed as a cube.

The central portion of said blank **10** has spaced parallel scored lines **12**, **13**, **14**, **15** and **16** having therebetween side portions **18**, **19**, **20** and **21** of equal size. At either end of said blank **10** are free end portions **25** and **26** which in the present embodiment of applicant's invention are each shown to be formed of a length equal to the diagonal distance of the rectangular figure to be formed by said sides **18–21**.

Extending upwardly and downwardly of said free end portion **25** are flap portions **28** and **29** scored along lines **30** and **31**, and extending upwardly and downwardly of said free end portion **26** are flap portions **32** and **33** scored along lines **34** and **35**. Said flap portions when folded at right angles along said scored lines form end enclosures, as indicated in FIG. 4, for the figure formed by said sides **18–21**. Said flap portions will be oversized and have an area of greater size than the area of the ends which they overlie whereby the end portions of said flaps will extend somewhat over the adjacent ends of the sides **18–21** to be firmly supported thereon.

Extending outwardly of and pivoted to said scored line **16** and formed out of said end portion **26** are vertically spaced tabs **36** and **37**. Said tabs have straight adjacent sides **36***a* and **37***a* extending in a direction at right angles to the direction of said scored line **16** and are here shown having their remote ends **36***b* and **37***b* undercut.

A pair of slits **39** and **40** are formed in the scored line **12** and are adapted to receive therethrough said tabs **36** and **37**. The sides **36***a* and **37***a* of said tabs will engage very closely the adjacent ends of said slits whereby there will be no appreciable lateral or sidewise movement of the ends joined by the engagement of said tabs with said slits.

At the center scored line **14**, open-ended slits **41** and **42** are formed at either end thereof. An elastic endless band **43** is provided.

Various kinds of indicia may be placed on the outer surface of said blank **10**. In the embodiment of the invention here disclosed, the indicia **45** indicates a Christmas motif.

In operation, with reference to said blank **10** as shown in FIG. 1, said blank will be reversely folded along the scored line **14** to form two side by side portions. The free end **26** will be folded inwardly with its inner end being brought into contact with the inner side of said scored line **14**. Thus the free end **26** with the sides **20** and **21** will form a triangle. Said binder **43** will be passed over said slits **41** and **42** and around the undercut end portions **36***b* and **37***b* of said tabs **36** and **37**. The tension of said binder **43** will retain in position the triangle thus formed. The free end **25** will be reversely folded and brought into an adjacent side by side relation with the free end **26**. Said tabs **36** and **37** will be disposed through said slits **39** and **40**. Said flaps **28**, **29**, **32** and **33** will be respectively folded along the scored lines **30**, **31**, **34** and **35** to normally lie in a flat condition overlying the ends of the figure formed by the folding of said blank **10**, as above indicated. Said flaps being somewhat larger

than the openings which they overlie will rest on the adjacent ends of the figure thus formed and thus will remain outwardly of the openings at said ends. It is seen that the reversely folded free ends by butting against the scored line **14** limit the width of the figure formed.

For purposes of storing or mailing the figure thus formed, the edges formed by the scored lines **13** and **15** will be pressed together and thus the entire figure will be flattened, as indicated in FIGS. 5, 7 and 8. Said figure is flattened against the tension of the binder **43**, as indicated in FIG. 6. Thus while the figure formed may be easily handled and retained in a flat condition, the instant it is released it will form itself into a three dimensional figure, here shown to be a cube.

Thus the applicant's invention results in a novel, easily constructed and easily assembled self-forming figure which may be used for attention arresting greeting purposes, for reference purposes with various kinds of information being indicated by the indicia placed thereon, or for purposes of illustration in view of a specific type of figure formed.

It will of course be understood that various changes may be made in the form, details, arrangement and proportions of the parts, without departing from the scope of applicant's invention, which, generally stated, consists in a device capable of carrying out the objects above set forth, in the parts and combinations of parts disclosed and defined in the appended claims.

What is claimed is:

1. A self-forming figure having in combination, an enclosure substantially parallelepiped in form, said enclosure being composed of two portions in side by side relation with each triangular in horizontal section and said portions having a pair of mating sides forming the diagonal of said enclosure, said portions having a common unitary edge portion forming one corner of said enclosure, said portions having separate edge portions forming the corner of said enclosure diagonally opposite said first mentioned corner, said mating sides being respectively pivoted at one end to their said separate edge portions and being free at their respective other ends, said other ends being in free engagement with the inner side of said first mentioned corner, a pair of vertically spaced tabs formed from one of said mating sides and being pivoted to said edge portion thereof, a pair of vertically spaced slits in the other of said separate edge portions removably receiving said tabs therein forming a separable corner of said enclosure, a pair of open-ended slits in the top and bottom portions respectively of said first mentioned corner of said enclosure, an endless elastic band disposed diagonally about said enclosure passing over said tabs to be engaged thereby and about said first mentioned corner and through the slits therein, and flaps triangular in plan respectively pivoted to the upper and lower sides of said mating sides to overlie the ends of said enclosure whereby said elastic band holds said enclosure in a formed condition by exerting pressure at either end of the diagonal of said enclosure and whereby pressing the corner of said enclosure at either side of said diagonal thereof flattens said enclosure against the tension of said elastic bands and said flaps fold to position overlying the collapsed sides of said enclosure.

2. A self-forming figure having in combination, an enclosure, said enclosure being composed of two portions having a pair of mating sides forming a common wall bisecting said enclosure, said portions having a common unitary edge portion forming one corner of said enclosure, said portions having separate edge portions in adjacent positions forming the corner of said enclosure opposite said first mentioned corner, said mating sides being respectively pivoted at one end to their said separate edge portions and being free at their respective other ends, said other ends being in free engagement with the inner side of said first mentioned corner, a pair of vertically spaced tabs formed from one of said mating sides and being pivoted to said edge portion thereof, a pair of spaced slits in the other of said separate edge portions removably receiving said tabs forming a separable corner of said enclosure, a pair of open-ended slits in the top and bottom portions respectively of said first mentioned corner of said enclosure, an endless elastic band disposed about said enclosure passing over said tabs to be engaged thereby and about said first mentioned corner and through the slits therein, and flaps respectively pivoted to the upper and lower sides of said mating sides to overlie the ends of said enclosure whereby said elastic band holds said enclosure in a formed condition by exerting pressure against either end of said bisecting wall of said enclosure and whereby pressing the portions of said enclosure at either side of said bisecting wall flattens said enclosure against the tension of said elastic band and said flaps overlie the flattened sides of said enclosure.

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