United States Patent [19]

Sweeney

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[11] **3,913,154**

[45] **Oct. 21, 1975**

[54] **MATTRESS FOUNDATION UNIT**

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[73] Assignee: **R. Thomas McClive**, Kenmore, N.Y.

[22] Filed: **Feb. 4, 1974**

[21] Appl. No.: **439,369**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 324,897, Jan. 18, 1973, abandoned.

[52] **U.S. Cl.** ..... **5/186 R**; 5/345; 108/56

[51] **Int. Cl.²** **A47C 19/00**; A47C 23/00

[58] **Field of Search** ..... 5/186 R, 192, 341, 345 R, 5/351, DIG. 1, 345; 108/51, 56, 57, 58; 297/218, 462, 442; 229/14 C; 52/667, 664

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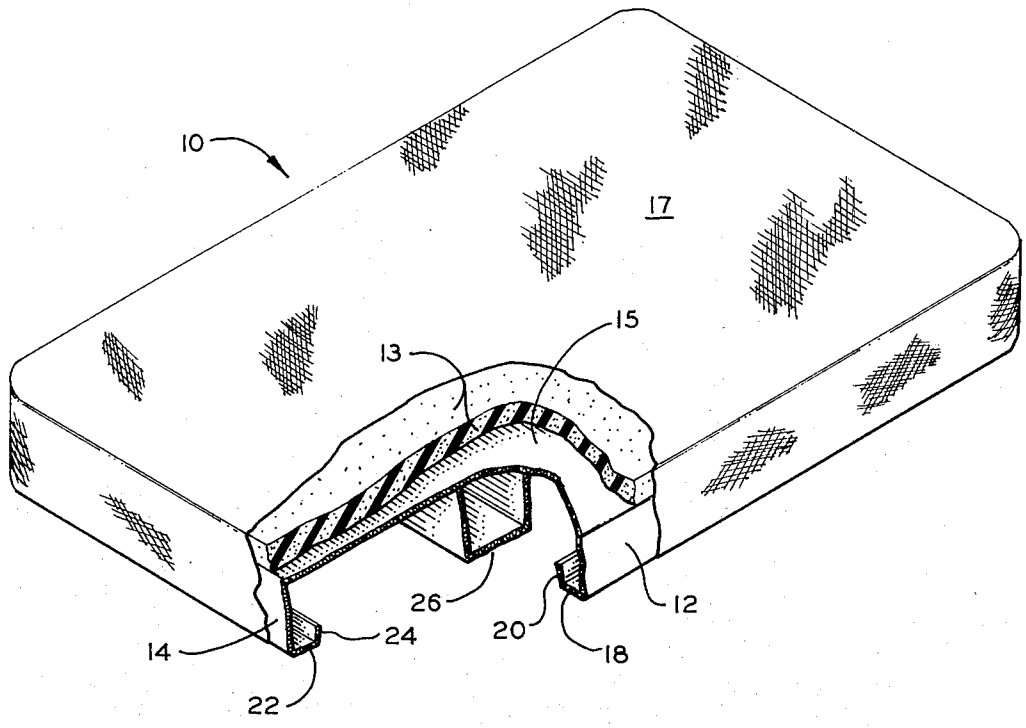
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Assistant Examiner—Andrew M. Calvert
Attorney, Agent, or Firm—Bruns & Jenney

[57] **ABSTRACT**

In a mattress foundation unit made from corrugated board, an enclosure member is folded to form the top, sides and ends of a beam enclosure wherein hollow beam members provide structural support.

2 Claims, 10 Drawing Figures



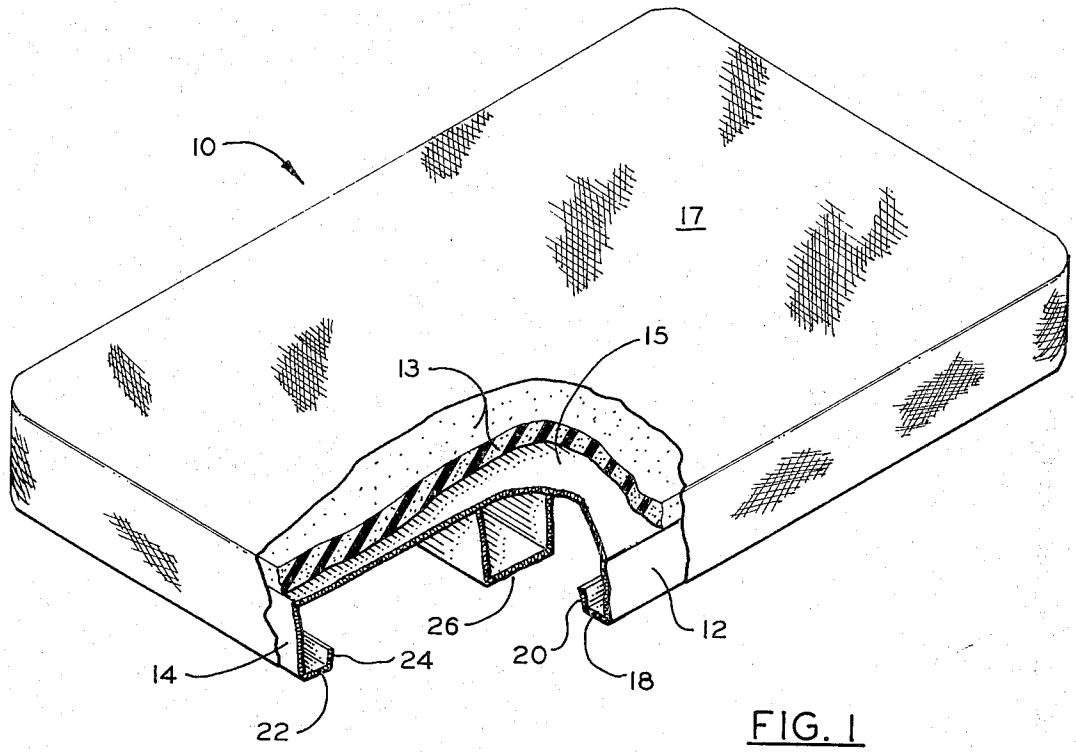

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FIG. 1

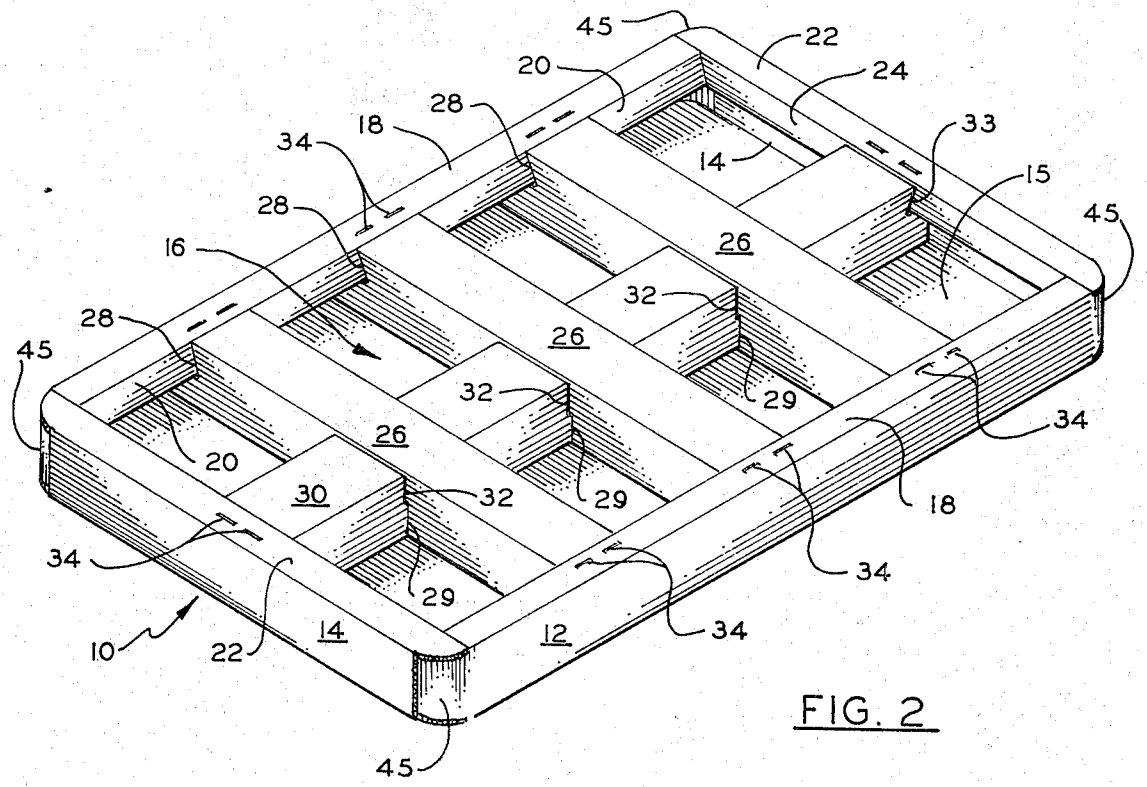

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FIG. 2

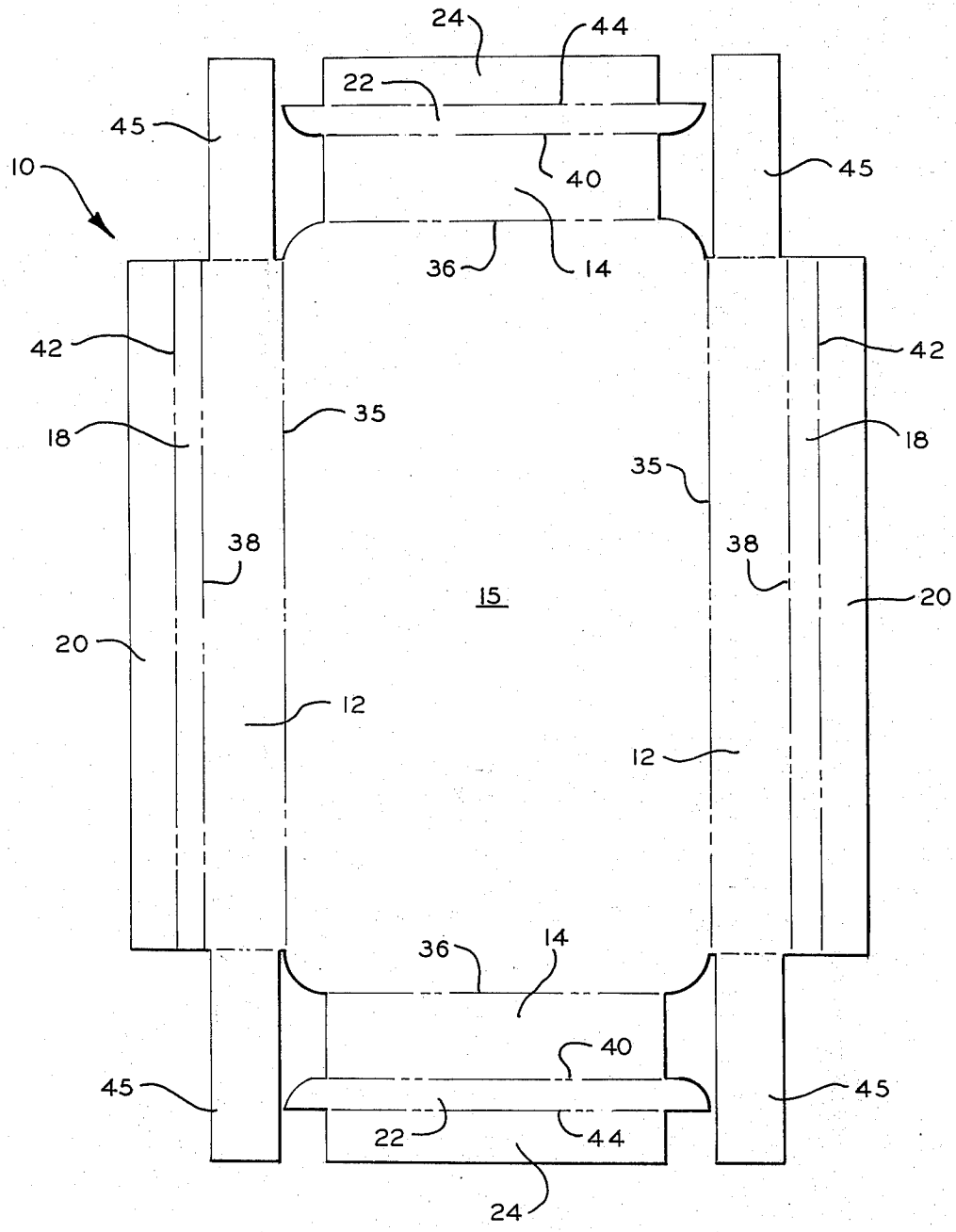

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FIG. 3

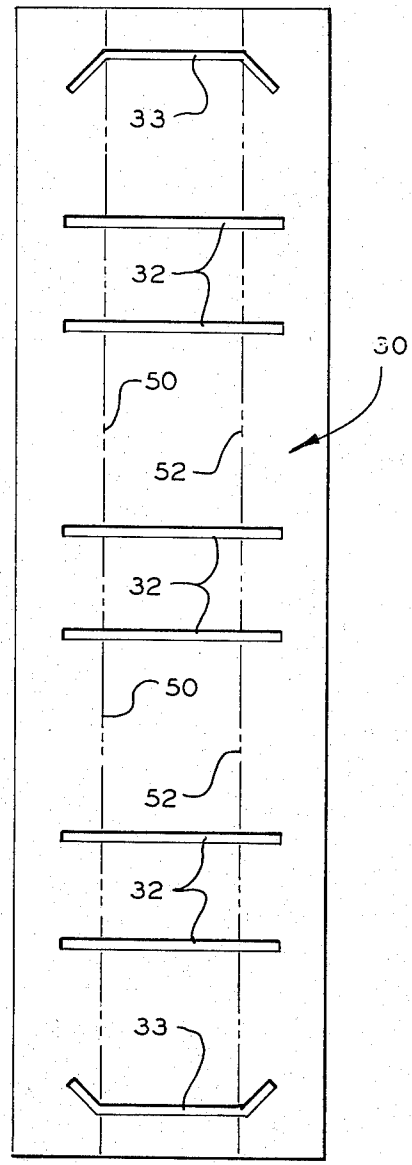


FIG. 5

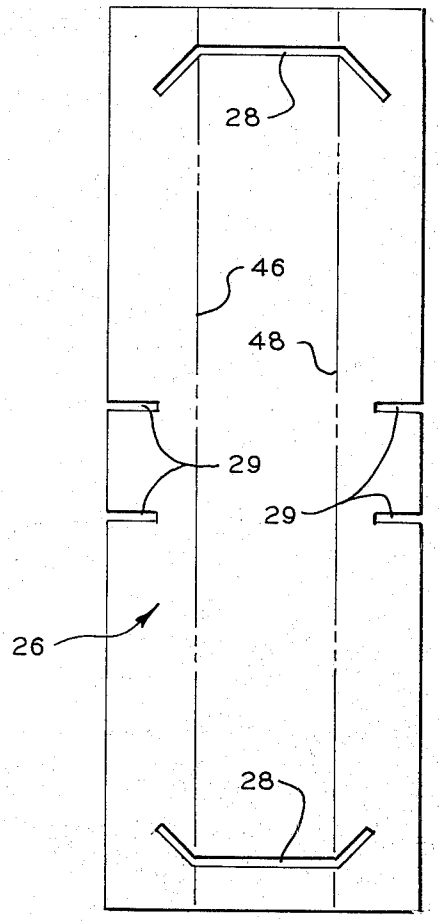


FIG. 4

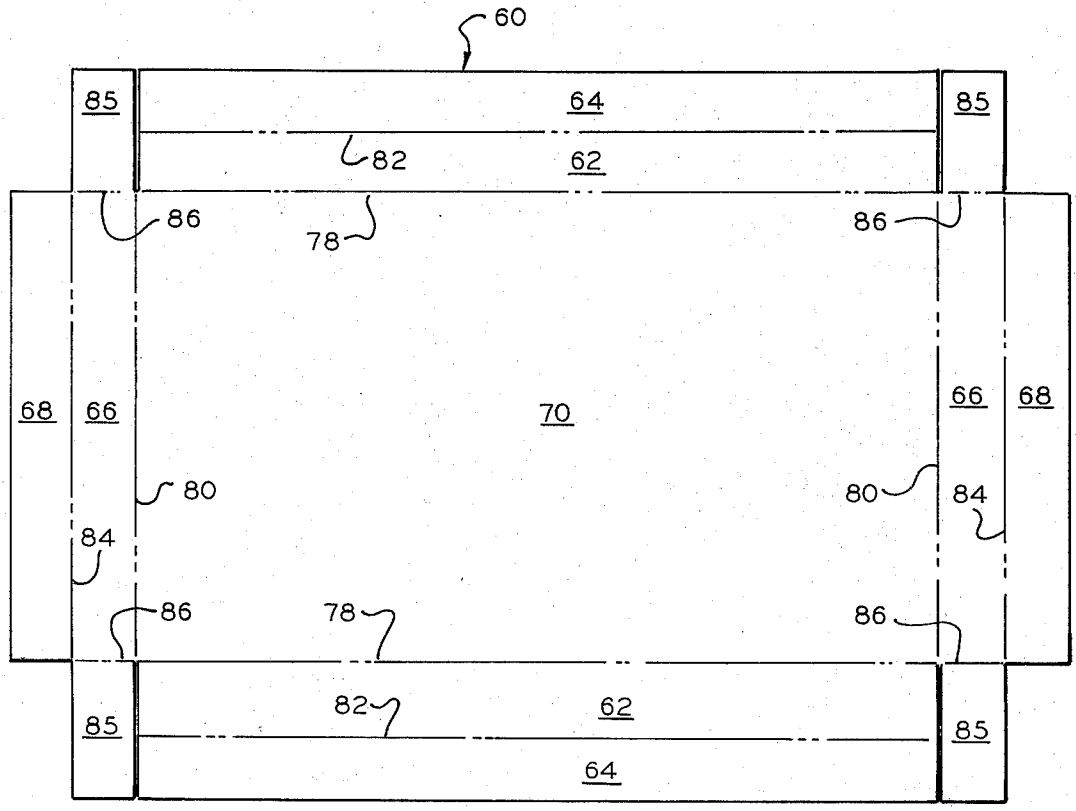


FIG. 7

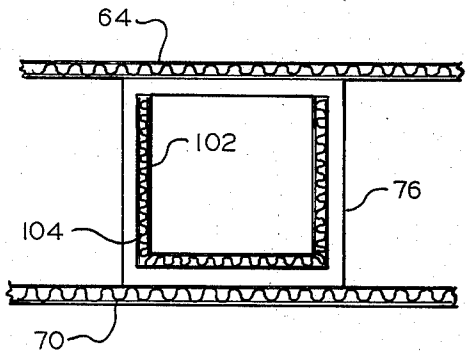


FIG. 9

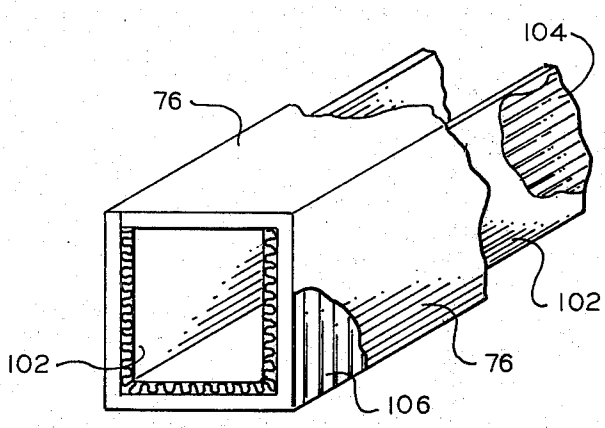


FIG. 10

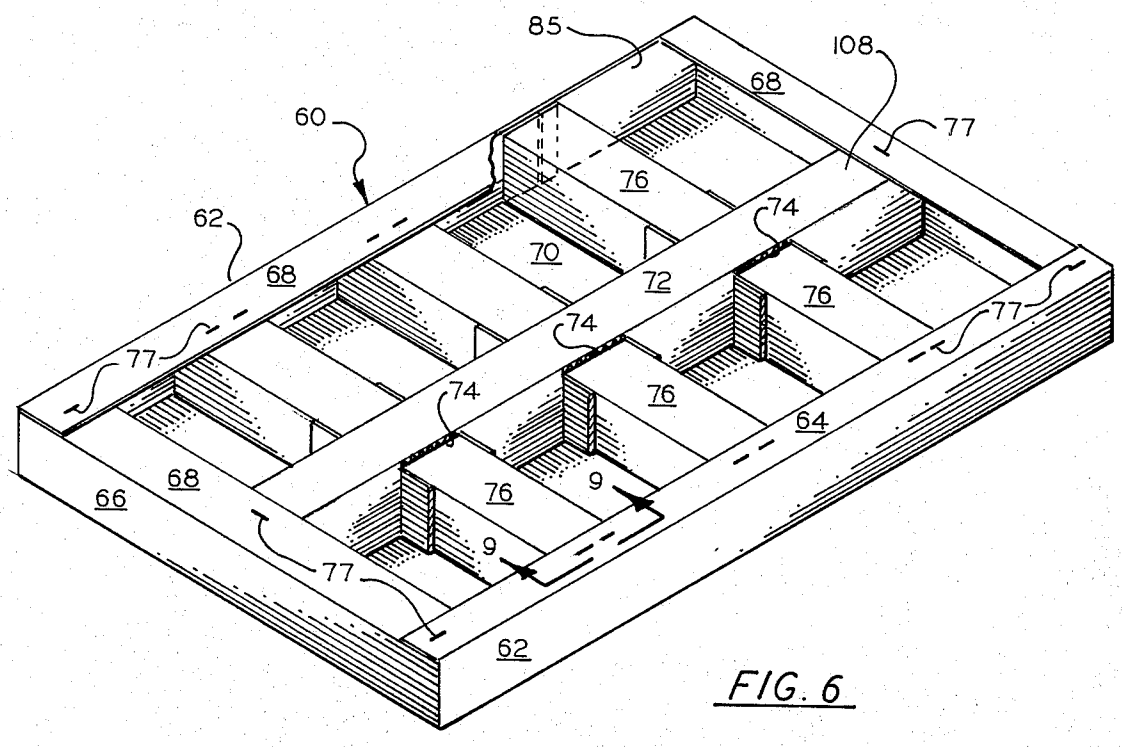

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FIG. 6

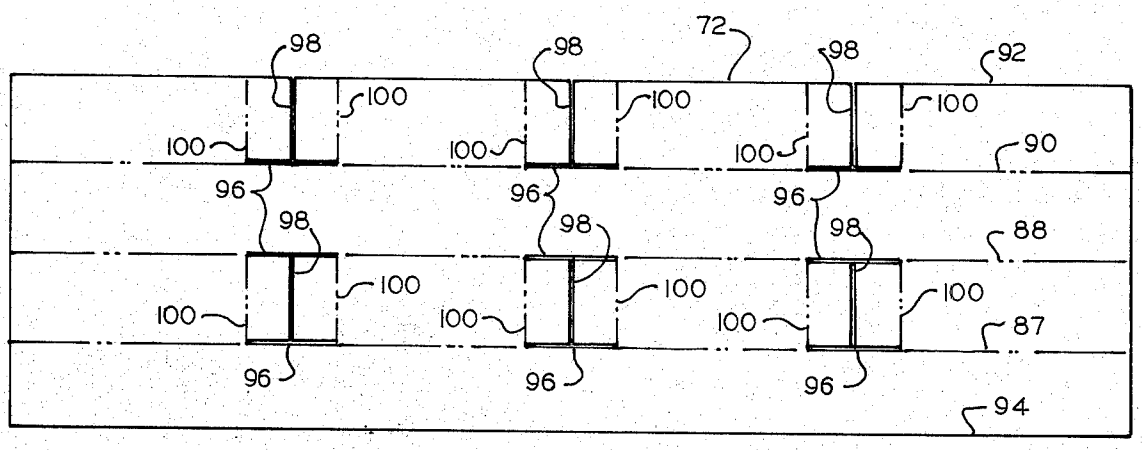

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FIG. 8

MATTRESS FOUNDATION UNIT

CROSS-REFERENCE TO RELATED APPLICATION

This application is a continuation-in-part of application Ser. No. **324,897**, filed Jan. **18, 1973**, now abandoned by the same inventor under the same title.

BACKGROUND OF THE INVENTION

This invention relates generally to furniture, and more particularly to a mattress foundation unit of novel construction.

Recently, corrugated board has been used as a construction material for furniture. In one type of construction, laminated layers of corrugated board are used to provide furniture which is lightweight, sound absorbent and of pleasing appearance.

Another type of construction utilizes a casing wherein a plurality of reinforcing members are included to provide structural support. The invention of a chair disclosed in U.S. Pat. No. **2,940,513** is exemplary of the reinforced casing.

A box spring for a bed is usually constructed from materials such as wood and metal. Typically, eighteen different components, including a wood base, a spring assembly, an insulator pad and a topper pad, are included in the box spring. The use of wood and metal as construction materials causes the box spring, and unassembled component parts thereof, to be large, heavy and expensive.

A mattress foundation or support that functions like a box spring but is made from corrugated board has heretofore been unknown in the prior art.

SUMMARY OF THE INVENTION

An object of the present invention is to provide a mattress foundation unit which is firm, lightweight and of low cost.

Another object of the present invention is to provide a mattress foundation unit comprised of a minimum number of component parts.

Another object of the present invention is to provide a mattress foundation unit comprised of a minimum number of dissimilar component parts.

Another object of the present invention is to provide a mattress foundation unit comprised of lightweight components which may be stored in a small space for manufacturing ease and economy.

According to the present invention, a beam enclosure member has at least one hollow beam member disposed therein; said members are constructed from a resilient, foldable, material.

In the present invention, a mattress foundation unit may be constructed from die-cuts of corrugated board which may be shipped flat, easily stored and assembled. The mattress foundation unit, which can also be used as a mattress if necessary, is thereby suitable for providing mass bedding in the event of a natural disaster, such as a flood or an earthquake.

In one specific embodiment, the top of the mattress foundation unit is covered by a foam rubber or urethane sheet which serves as a mattress. The members comprising the foundation unit and the sheet are all lightweight and easily stored thereby being particularly suitable for providing bedding for campers as well as disaster victims.

Other objects, features and advantages of the present invention will become more apparent in the light of the following detailed description of a preferred embodiment thereof as illustrated in the accompanying drawing.

BRIEF DESCRIPTION OF THE DRAWING

FIG. **1** is a perspective view, with a part broken away, of a preferred embodiment of the present invention;

FIG. **2** is a perspective view of the beam enclosure of the embodiment of FIG. **1**;

FIG. **3** is a plan view of an enclosure member which may be used in the embodiment of FIG. **1**;

FIG. **4** is a plan view of a transverse hollow beam member which may be used in the embodiment of FIG. **1**;

FIG. **5** is a plan view of a longitudinal hollow beam member which may be used in the embodiment of FIG. **1**;

FIG. **6** is a perspective view, with a part broken away, of a modification of the beam enclosure of the present invention;

FIG. **7** is a plan view of an enclosure member which may be used in the embodiment of FIG. **6**;

FIG. **8** is a plan view of a longitudinal hollow beam member which may be used in the embodiment of FIG. **6**;

FIG. **9** is a vertical section taken on lines **9—9** of FIG. **6**; and

FIG. **10** is a fragmentary perspective view, with parts broken away, of a transverse beam which may be used in the embodiment of FIG. **6**.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to FIG. **1**, a mattress foundation or support unit includes a corrugated board enclosure member **10** which is folded to provide integral sides **12**, ends **14** and a top **15** which define a beam enclosure **16**. Substantially covering the top **15** is a sheet **13** of foam rubber, urethane or other suitable material. Typically, the sheet **13** is about **2** inches thick, thereby serving as a resilient top for the foundation unit or as a substitute for the mattress itself. The enclosure member **10** and sheet **13** may be encased within a decorative cloth casing **17** thereby providing a mattress foundation unit having a pleasing appearance similar to that of a conventional box spring. If desired, member **10** and sheet **13** can be placed in a sealed, waterproof casing (not shown) of plastic film before being positioned in the casing **17**.

Referring now to FIG. **2** wherein the beam enclosure **16** is shown in an upside down position, the sides **12** are folded to provide side supports **18** and side flaps **20**. Similarly, the ends **14** are folded to provide end supports **22** and end flaps **24**. Typically, the supports **18**, **22** rest on a floor through the casing **17**.

Positioned in the enclosure **16** are a plurality of corrugated board transverse hollow beam or box beam members **26** which have notches **28** for receiving the side flaps **20**. The transverse beam members are thereby secured within the enclosure **16**, and the sides **12** are maintained perpendicular to the top **15**. The transverse beam members have notches **29** in the median portions thereof which are described more fully hereinafter.

Positioned in the enclosure **16** is a corrugated board longitudinal hollow beam member **30** which has transverse notches **32** corresponding to the notches **29** of the transverse beam members. The notches **29, 32** respectively receive the beam members **30, 26,** thereby providing an interlocking connection therebetween. Longitudinal beam member **30** also has notches **33** which receive end flaps **24** whereby the ends **14** are maintained perpendicular to the top **15.**

In the preferred embodiment, a plurality of staples **34** secure the supports **18, 22** to the beam members **26,** 30, respectively.

Referring now to FIG. **3** illustrating the enclosure member **10** in flat form as die-cut, broken lines **35, 36** respectively define the boundary between the top **15,** the sides **12** and the ends **14.** The beam enclosure **16** is formed by folding member **10** along the lines **35, 36** to cause the sides **12** and ends **14** to extend from the top **15** (in the same direction) at right angles.

In providing the supports **18, 22,** sides **12** and ends **14** are respectively folded along broken lines **38, 40** to cause the supports **18, 22** to extend under and parallel to the top **15.** The boundary between the side supports **18** and the side flaps **20** is defined by broken lines **42.** Similarly, the boundary between the end supports **22** and the end flaps **24** is defined by broken lines **44.** The sides **12** and ends **14** are folded along the lines **42, 44** to cause the flaps **20, 24** to be received by the notches **28, 33** (FIG. **2**) as described hereinbefore.

Side tabs **45** may be formed integral with the sides **12** for bending and disposition inside the enclosure ends **14** (FIG. **2**), the tabs being stapled or taped thereto for providing structural support at the corners of the enclosure **16.** In the alternative, tabs may be formed integral with the ends **14** for disposition along the sides **12** and stapled or taped thereto.

Referring now to FIG. **4,** the transverse beam members **26** are formed by folding the flat die-cut pieces along broken lines **46, 48** to cause the portions including the notches **29** to extend at right angles and thereby form a hollow beam.

Referring now to FIG. **5,** the longitudinal beam member **30** is formed by folding the die-cut piece along the broken lines **50, 52** to form a hollow beam in the manner described hereinbefore.

FIG. **6** shows a modification of the beam enclosure **60** of the mattress foundation unit of this invention. Shown in an upside down position, the beam enclosure has sides **62,** side supports **64,** ends **66,** end supports **68** and top **70.** Supports **64** and **68** rest on the floor through any appropriate covering (not shown). Positioned in the enclosure is a corrugated board longitudinal hollow beam **72** having a plurality of apertures **74** therethrough. Passing through these apertures are transverse hollow beams **76** of corrugated board. A plurality of staples **77** secure the supports **64** and **68** respectively to the beam members **76** and **72.**

Referring now to FIG. **7** illustrating enclosure **60** in flat form as die-cut, broken lines **78, 80** respectively define the boundary between the top **70,** the sides **62** and the ends **66.** The enclosure member is formed by folding along lines **78, 80** to cause sides **62** and ends **66** to extend from the top **70** (in the same direction) at right angles. Sides **62** and ends **66** are folded respectively along broken lines **82, 84** to form the supports **64, 68** which extend under and parallel to top **70.**

End tabs **85** may be formed integral with the ends **66** and folded along broken lines **86** for disposition along sides **62** as seen in the broken away portion of FIG. **6.** In the alternative, the tabs may be formed integral with the sides **62** for disposition along ends **66.** These tabs provide structural support at the corners of the enclosure **60.**

Referring now to FIG. **8** illustrating the longitudinal hollow beam **72** in flat form as die-cut, by folding along broken lines **87, 88** and **90** and taping at meeting edges **92** and **94,** a hollow beam with its sides at right angles is formed. The apertures **74** are formed in the longitudinal beam **72** by cutting along lines **96, 98** and folding along lines **100.**

Transverse beams **76,** FIGS. **9** and **10,** are formed, similar to the longitudinal beam **72,** by folding a die-cut corrugated board along three parallel fold lines (not shown). After taping along the meeting edges as done for the longitudinal beam **72,** a hollow beam is formed with its sides at right angles. For added strength, a U-shaped support insert **102** formed by folding a die-cut corrugated board along two parallel fold lines (not shown) is received by each transverse beam **76.** Further strength is obtained by having the corrugation **104** of the support insert **102** run perpendicular to the corrugation **106** of the transverse beam **76.**

The transverse beams **76** are received within apertures **74** thereby forming a beam assembly **108** which is received within the enclosure member as best seen in FIG. **6.** Alternatively, apertures can be formed in the transverse beams in which the longitudinal beam is received.

Supports **64, 68** are connected by staples **77** to the extremities of the transverse and longitudinal beams, respectively, FIG. **6.**

Thus there has been described a mattress foundation unit made from corrugated board. The corrugated board is typically the double wall type but may be of any suitable type. The members **10, 26, 30, 60, 72, 76** and **102** may be made from die-cuts of the corrugated board or provided in any other suitable manner. While the invention has generally been referred to herein as a mattress foundation unit, it will be understood from the description that this term is also intended to mean a mattress as well as a support when the unit is so used.

Although the invention has been shown and described with respect to a preferred embodiment thereof, it should be understood by those skilled in the art that various changes and omissions in the form and detail thereof may be made therein without departing from the spirit and the scope of the invention.

I claim:

1. A mattress foundation unit comprising a substantially rectangular, unitary corrugated board enclosure member, the enclosure member having a horizontal, continuous top and a pair of sides and a pair of ends formed integrally with the top and depending therefrom to form a continuous vertical skirt around the periphery of the top, the enclosure member also including end and side supports formed integrally respectively with the enclosure ends and sides, the end and side supports being folded inwardly so as to be disposed in spaced, parallel relation to the top, a longitudinally extending independent hollow corrugated board beam member centrally disposed within the enclosure member, a plurality of transversely extending uncut hollow corrugated board beam members disposed within the

enclosure member and passing through the longitudinally extending member at substantially right angles thereto, and means to secure the end and side supports to the ends of the longitudinally and transversely extending beams whereby the latter provide internal reinforcement for the enclosure member.

2. A mattress foundation unit as defined in claim 1 wherein said transversely extending hollow beam members have U-shaped insert members of corrugated board positioned therein, the beam and insert members being arranged so that the corrugations of the former run perpendicularly to the corrugations of the latter.

* * * * *