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Bagley

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(54) **APPARATUS FOR POSITIONALLY RETAINING FLEXIBLE MATERIAL**

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(52) **U.S. Cl.** **38/102.1**; 38/102.2; 38/102.9; 38/102.91
(58) **Field of Search** 38/102.1, 102.2, 38/102.4, 102.9, 102.91; 248/125.1, 125.8, 449, 676

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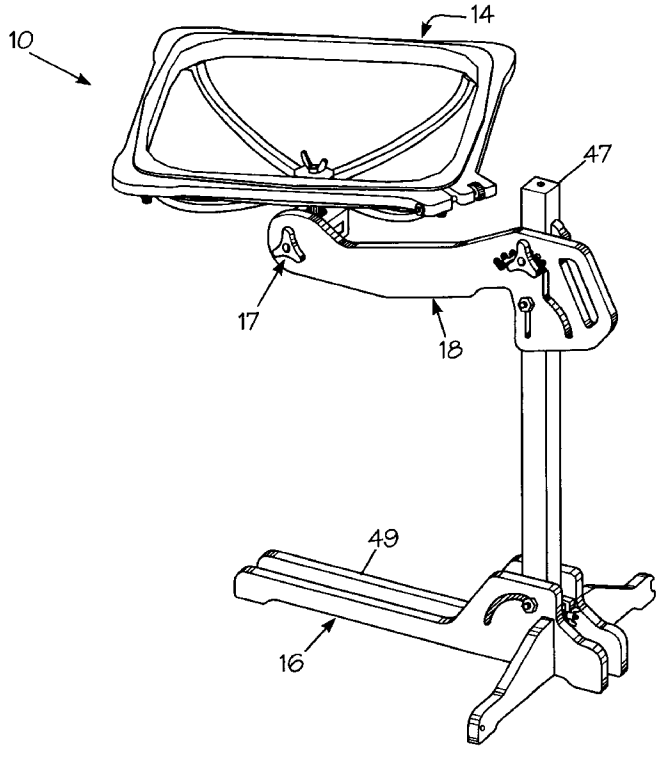
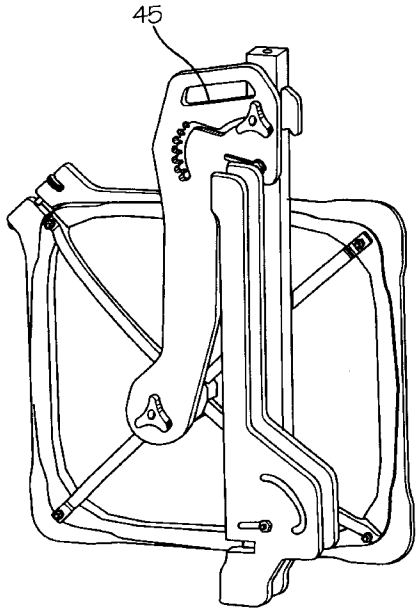
(57) **ABSTRACT**

The present invention provides an apparatus for positionally retaining flexible material. The apparatus is a substantially rectangular footed stand with an elongated cantilever member adjustably disposed along the footed stand's rectangular portion. A flexible material retaining mechanism is connected along the cantilever member's longitudinal length via a clamping mechanism. The retaining mechanism is selectively positionable about the clamping mechanism 360° in both the vertical and horizontal plane.

13 Claims, 8 Drawing Sheets





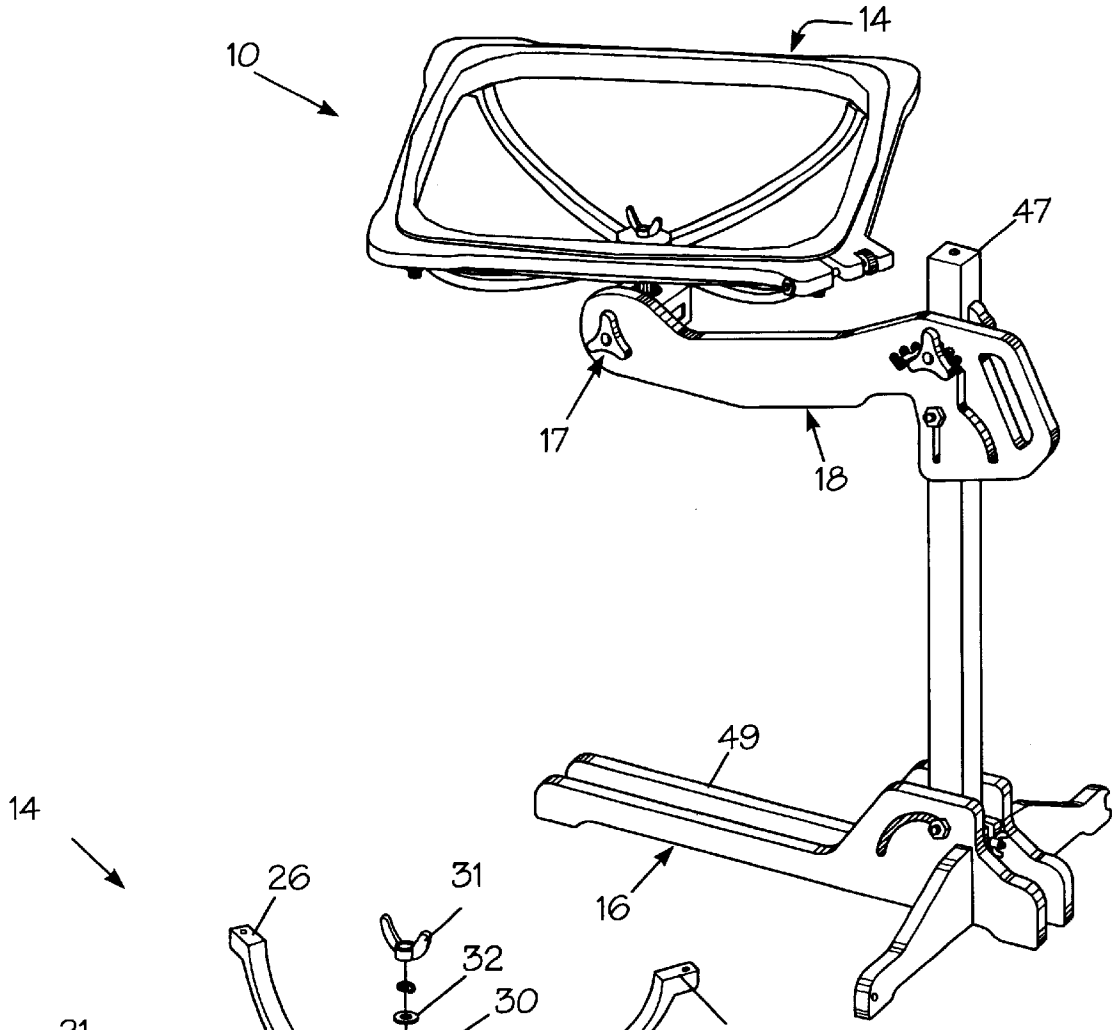


Fig. 1

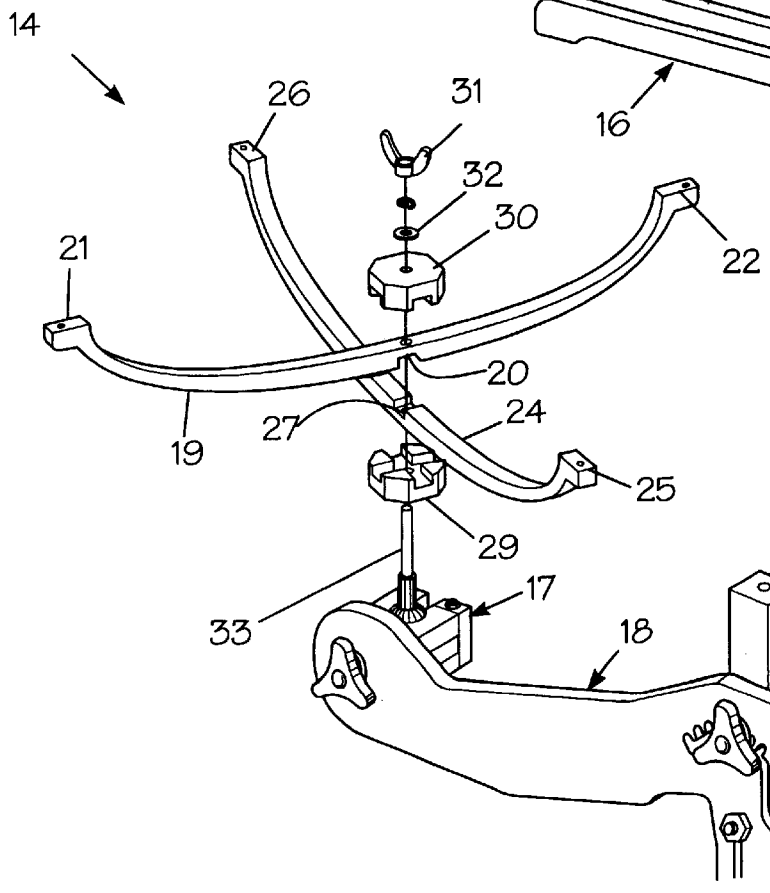


Fig. 2

Fig. 3a

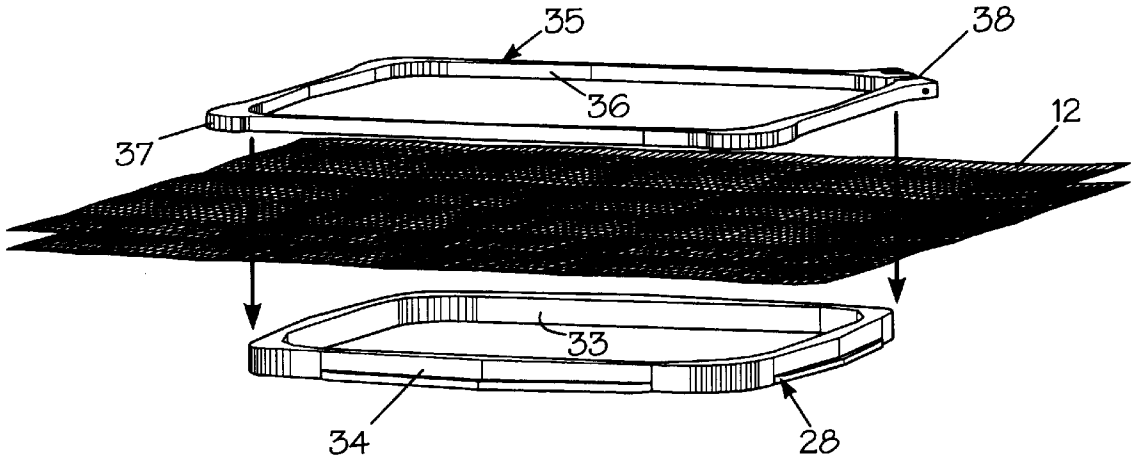


Fig. 3b

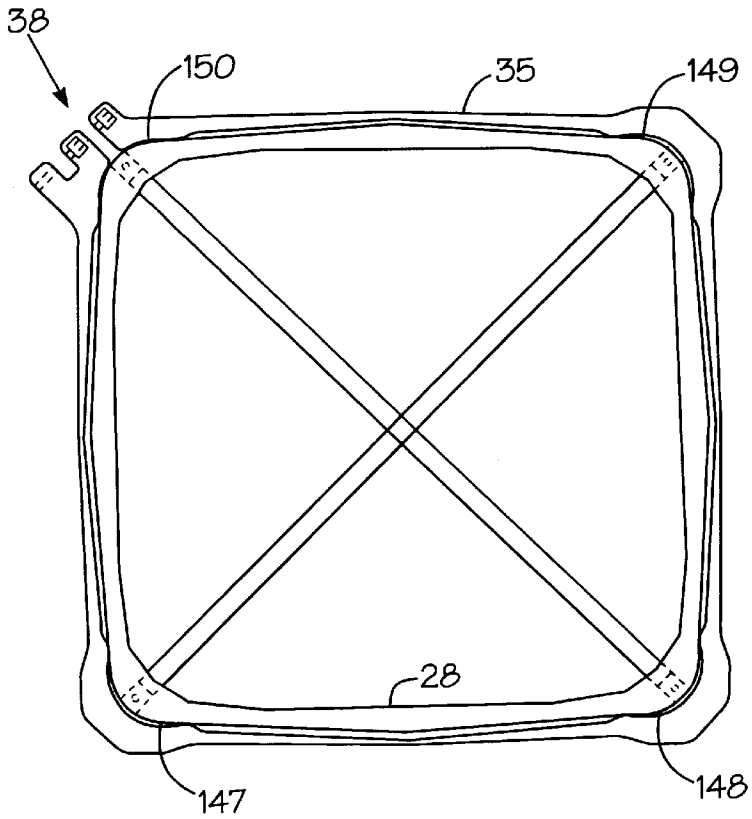


Fig. 3c

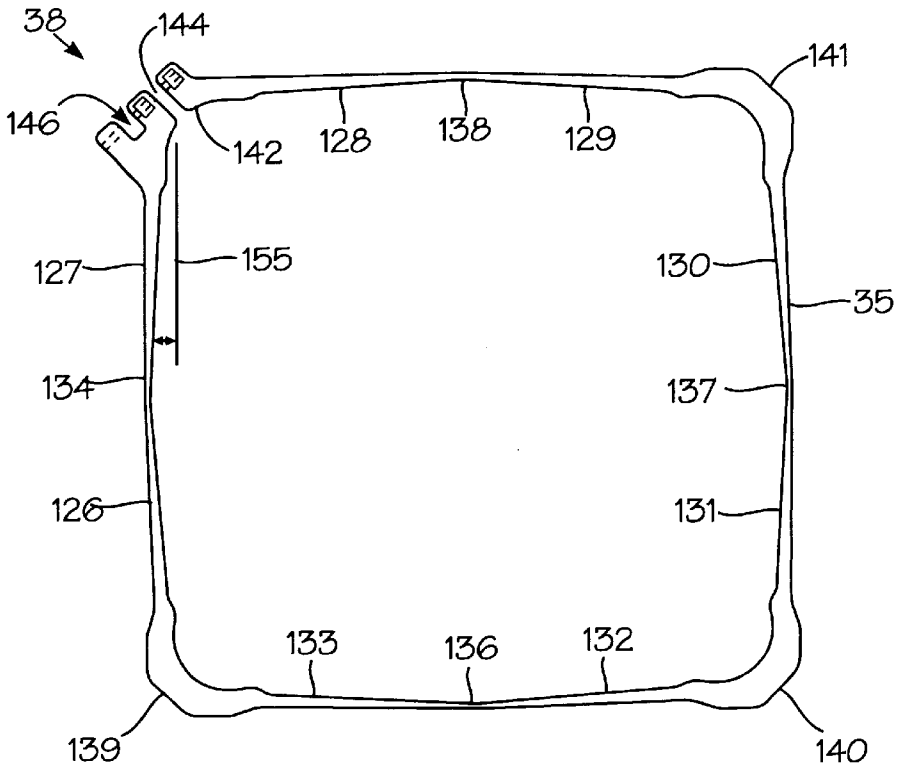

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Fig. 3d

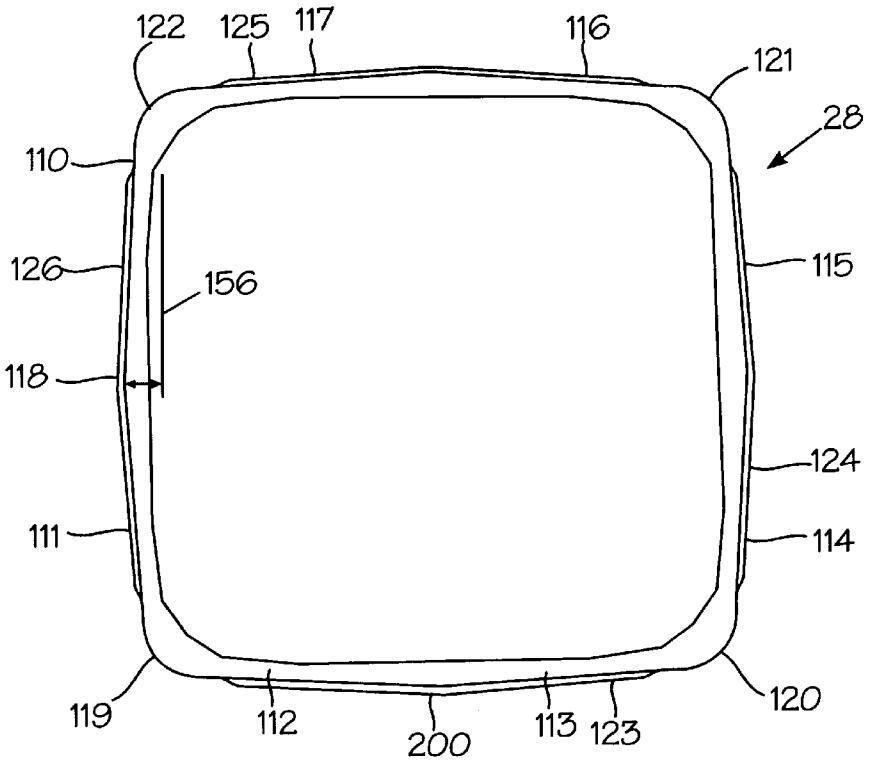
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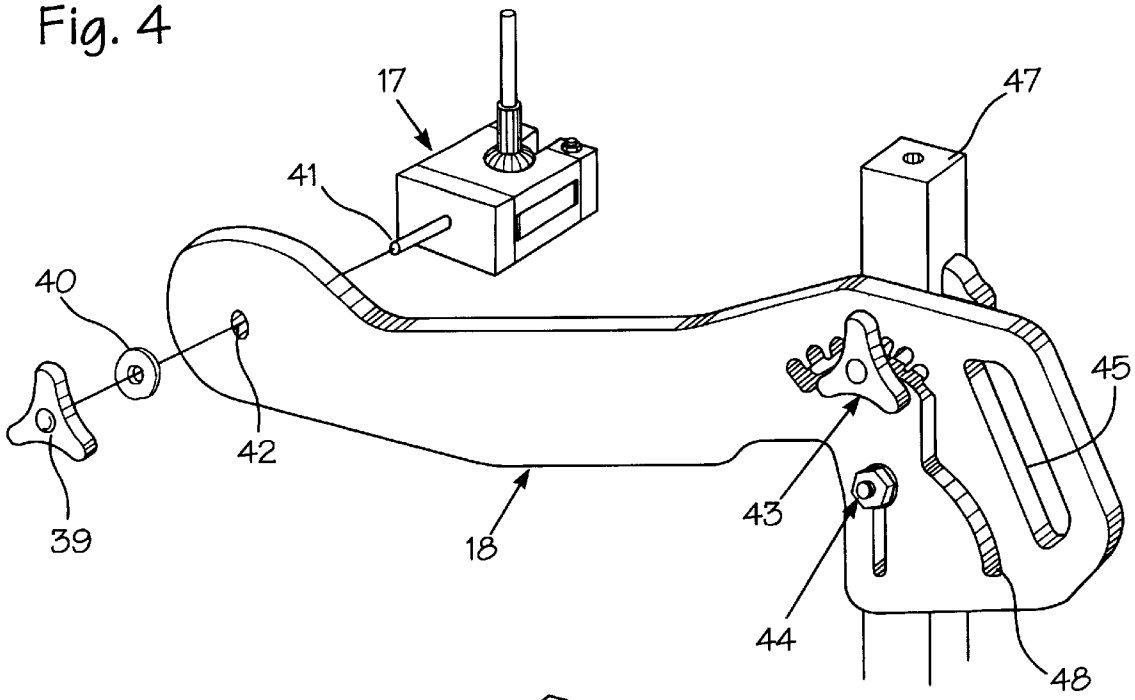
Fig. 4



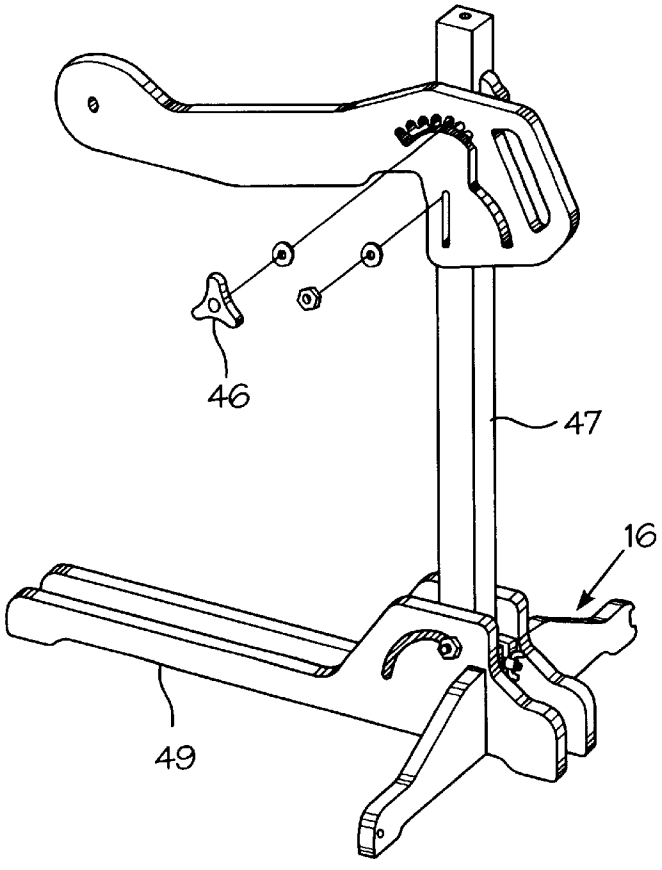


Fig. 5

Fig. 6

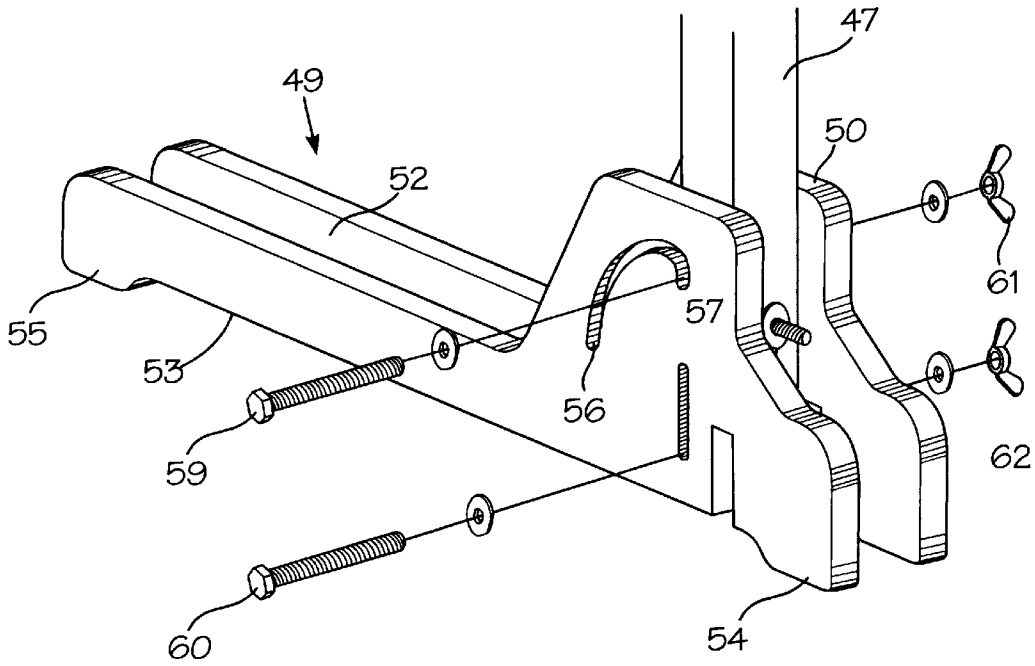


Fig. 7

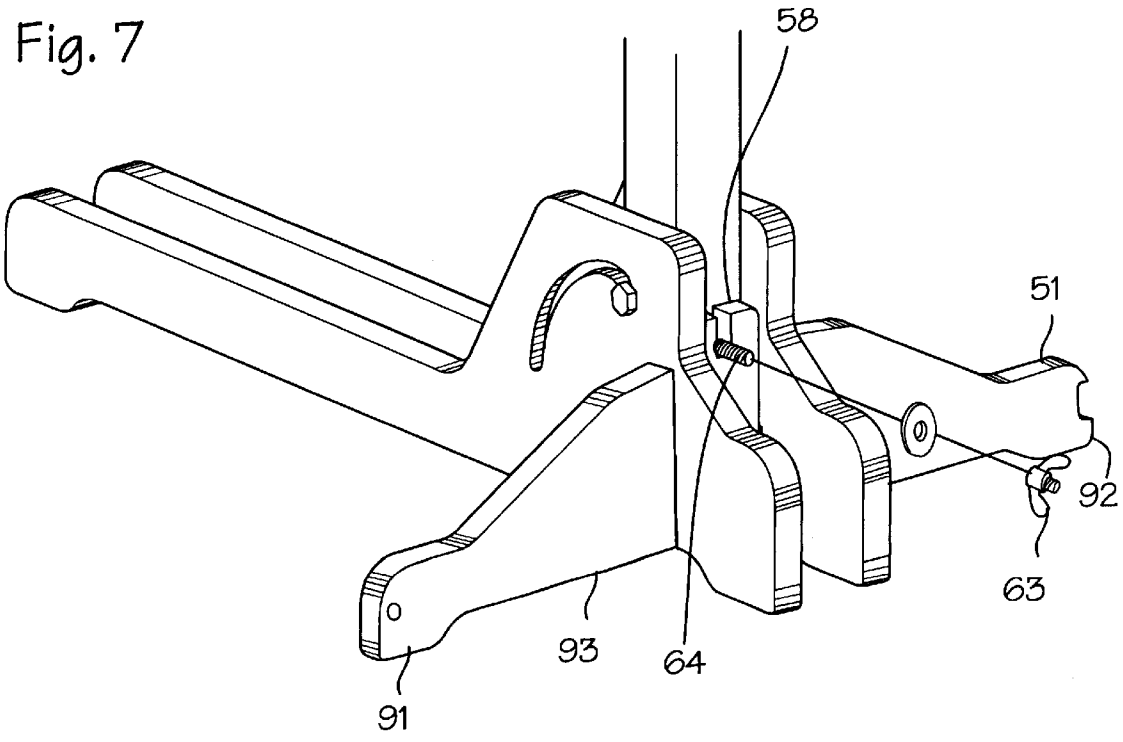


Fig. 8

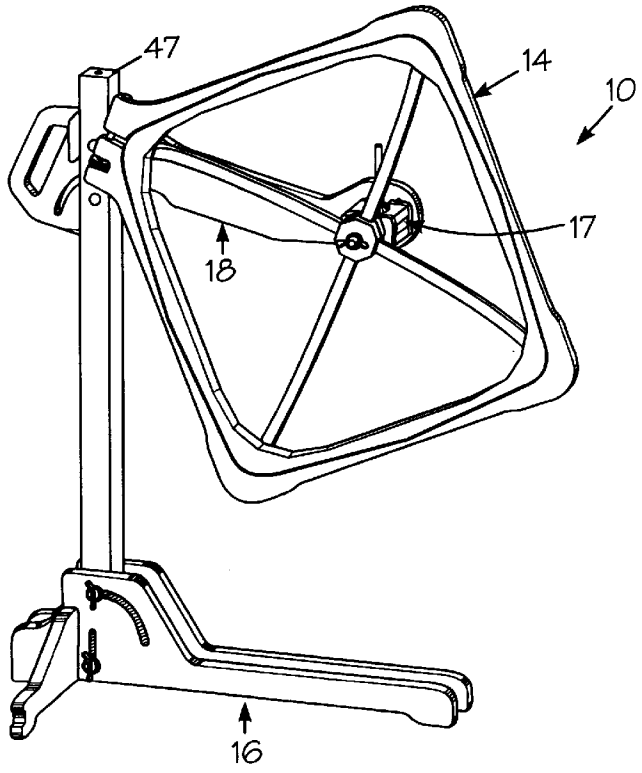


Fig. 9

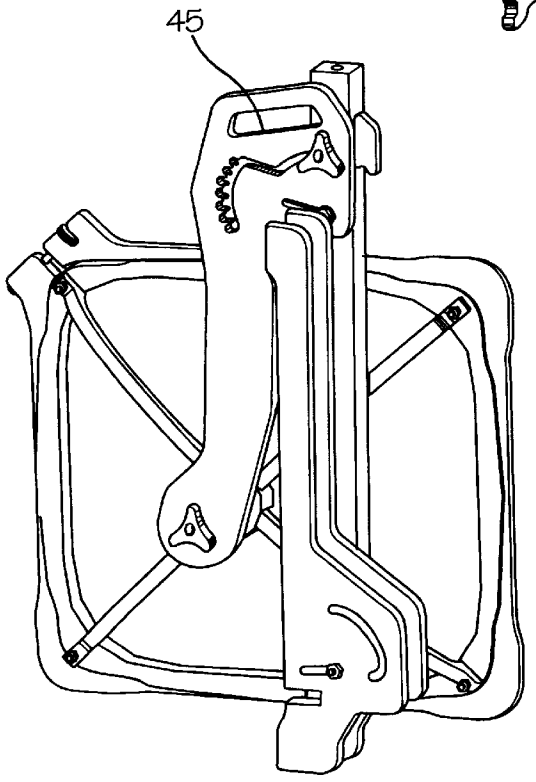


Fig. 10

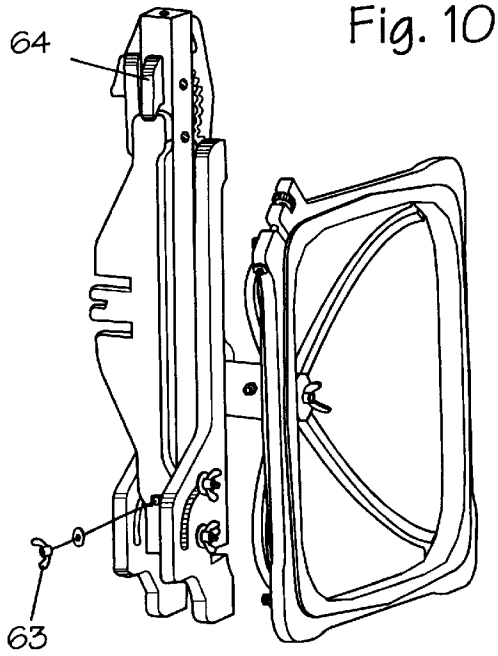


Fig. 11

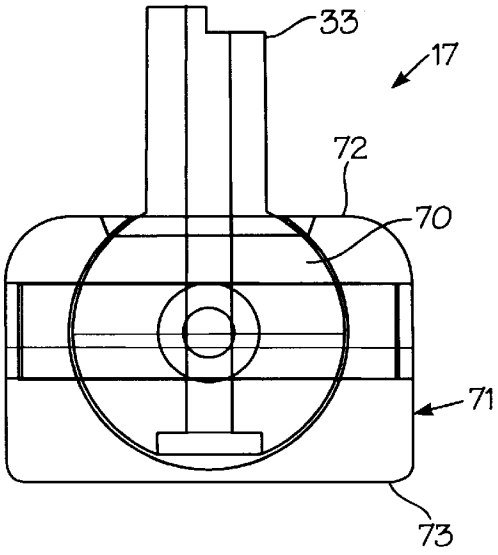


Fig. 13

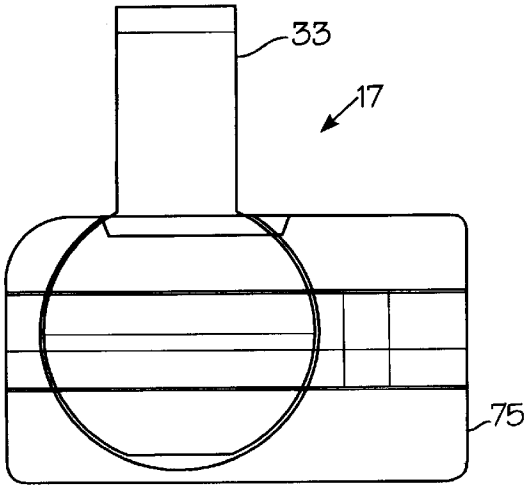


Fig. 12

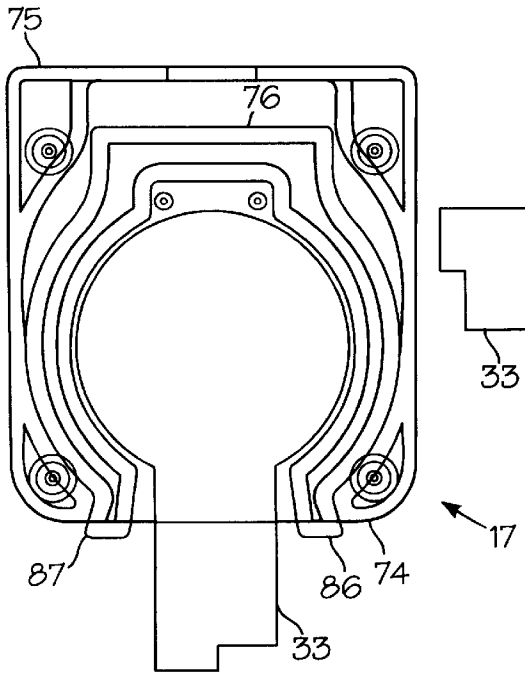


Fig. 14

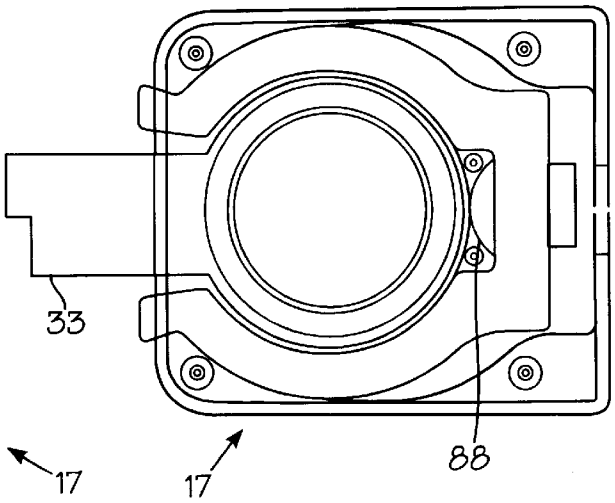


Fig. 15

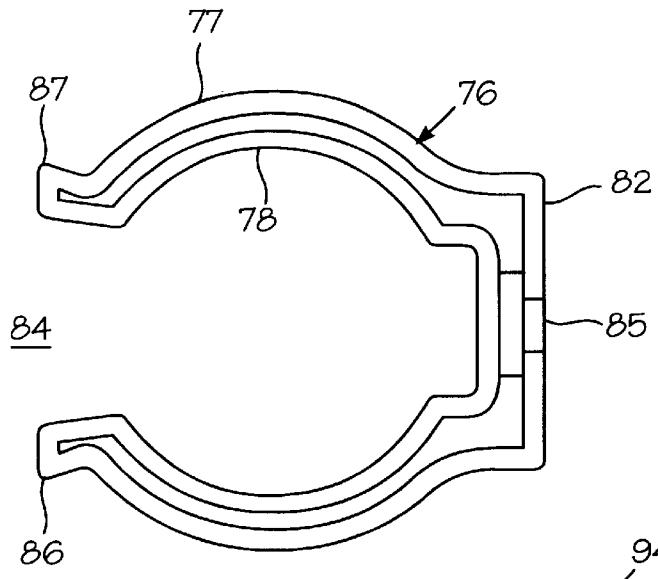


Fig. 16

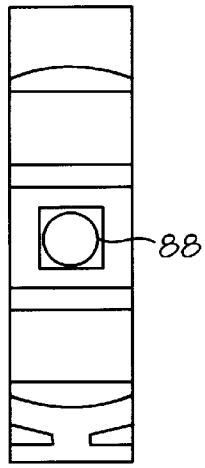
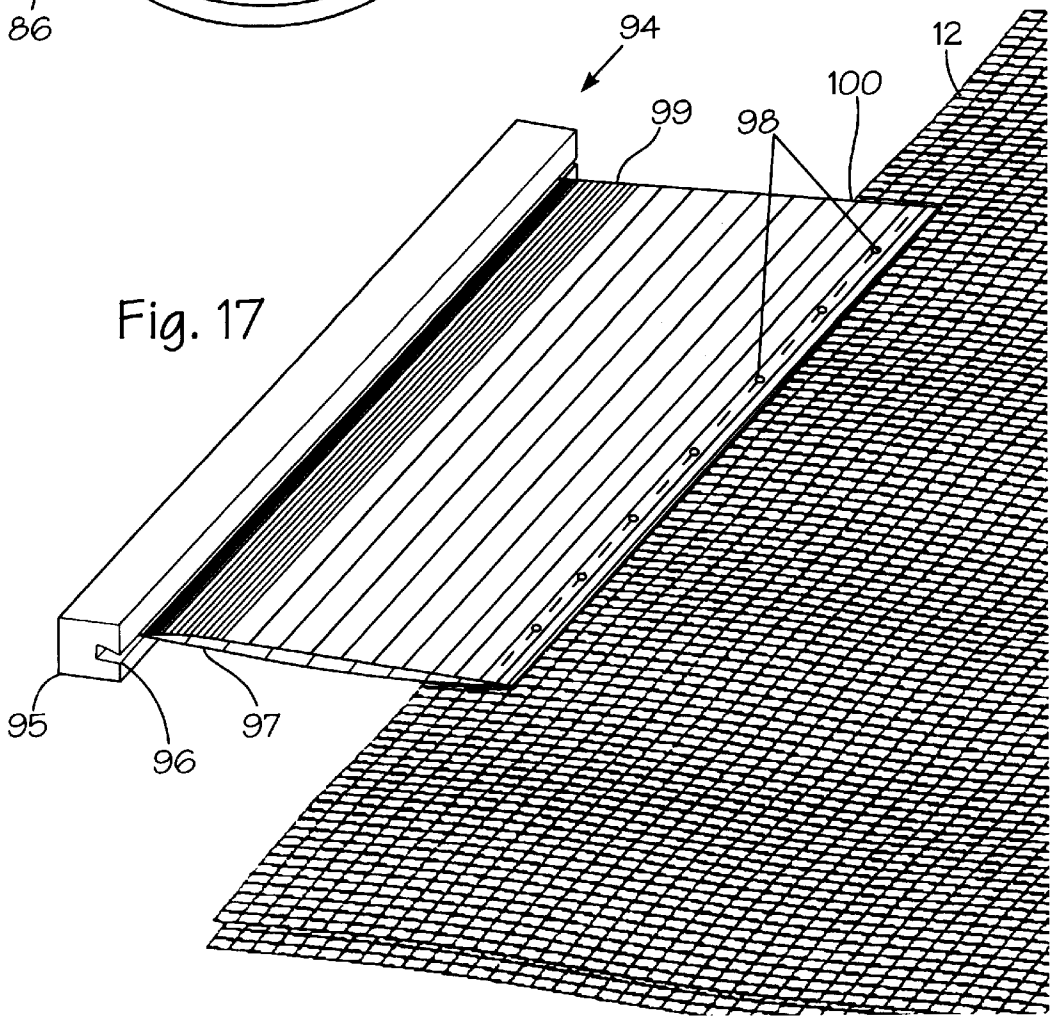


Fig. 17



APPARATUS FOR POSITIONALLY RETAINING FLEXIBLE MATERIAL

FIELD OF THE INVENTION

The invention relates, in general to an apparatus for positionally retaining flexible material. In particular the invention relates to an apparatus for positionally retaining quilting material, craft projects, and flexible fabric. More particularly the invention relates to an apparatus for positionally retaining materials quilting wherein the apparatus has a plurality of positions relative to the quilter or user. Each selected position creates a hands free environment for quilting or craft projects.

BACKGROUND OF THE INVENTION

Flexible materials that provide warmth have changed and matured over the years. For example, quilts at on time were thought of only as a means to keep warm or as a bed cover. Historically, a quilt is a coverlet or blanket made of two layers of fabric with a layer of cotton, wool, feathers, or down in-between. All are stitched firmly together usually in a decorative crisscross design. Today, quilts are still used for warmth and bed comforters but they are also works of art. The International Quilt Festival, Houston, Tex., 1999 evidenced the art form to which quilts have become. Quilts have become fabric mosaics depicting important events in people's lives and events in history. The quality and artistry of the quilters is comparable to traditional works of art.

Quilting has become a business, a recreational activity, and a source of joy for men and women alike. Machines to hold quilting material have evolved from a simplistic hoop positioned on a person's lap to very large quilting mechanisms used in factories. The quilting mechanisms used by individuals outside of a factory setting are generally quilting stands used to support the quilting material. In generally, these stands evolved from stretcher frames and embroidery hoops. These types of quilting frames are generally round. Quilts are inherently square or rectangular. The plurality of quilting workpieces used to produce a single quilt are inherently square because the quilt is square. Stretcher frames and embroidery hoops provided the quilter with a hands free environment but the quilter would be required to frequently reposition the quilting material because of the inherent difficulty in matching a square pattern to a round hoop.

In the past quilting machines that provide a hands free environment for the quilter had limited mobility and could only be positioned in a limited number of ways. The quilting stand was generally fixed or rigid and could not be easily moved, stored, or transported. The rigidity was thought to be necessary to support the weight of the quilting material. The engineering effort of the past equated weight to rigidity and rightly so. The strength of materials in the past is not the strength of materials today.

The engineering design of quilting machines or frames to be useful in quilting requires the frame to be multi-positionable. The multiple positions of the frame in relation to the quilter enables the quilter to quilt with both hands provided the frame can be locked into the selected position. In the past attempts were made to lock or clamp the frame in-place. These efforts failed because the locking or clamping mechanism was borrowed from another industry and did not lend itself to quilting. These clamping mechanisms were for positioning workpieces relative to a machine that would do work on selected workpieces.

It would be desirable to have an apparatus for positionally retaining flexible material that is easy to disassemble and fold into a compact unit for transport. The apparatus would have a substantially rectangular hoop or retaining mechanism to hold the flexible material. The hoop would be multi-positionable and enable an operator or user to use both hands when performing activities such as quilting. The retaining mechanism would be able to rotate 360° (degrees) in the vertical plane relative to the user. The retaining mechanism would be able to rotate 360° (degrees) in the horizontal plane relative to the user. The retaining mechanism would be positionally adjustable in the vertical plane relative to the user to accommodate a seated or standing user.

SUMMARY OF THE INVENTION

The present invention is a transportable multi-positionable apparatus for retaining flexible material. The present invention has a substantially rectangular hoop or retaining mechanism to hold the flexible material. The retaining mechanism may, if desired, be swivelable and positionally connected to a substantially rectangular footed stand member. The swivel action permits the retaining mechanism to rotate 360° (degrees) both the vertical and horizontal plane relative to a seated or standing user. The retaining mechanism may, if desired, be adjustably positioned vertically relative to the seated or standing user. The present invention creates a positionable and hands free environment for the seated or standing user.

The substantially rectangular footed stand member has an upright substantially rectangular portion selectively connected to a substantially rectangular footed portion. One end of an elongated cantilever member is connected to one end of the upright portion oppositely spaced from the substantially rectangular footed portion. The cantilever member's other end has the flexible material retaining mechanism mounted thereto via a clamping mechanism. The cantilever member may, if desired, be selectively adjusted in the vertical plane relative to the footed portion of the substantially rectangular footed stand member.

The clamping mechanism has an outwardly extending swivelable first shaft that is connected to the base of the retaining mechanism. The first shaft enables the flexible material retaining mechanism to rotate 360° (degrees) in the horizontal plane relative to the footed portion of the substantially rectangular footed stand member. The first shaft may, if desired, be selectively rotated 90° (degrees) with respect to the vertical plane of the footed portion of the substantially rectangular footed stand member. The flexible material retaining mechanism may, if desired, be rotated 360° (degrees) in the vertical plane relative to the footed portion of the substantially rectangular footed stand member.

The clamping mechanism has a second outwardly extending shaft. The second shaft traverses one end of the cantilever member oppositely spaced from the upright portion of the substantially rectangular footed stand member. The second shaft is adjustably secured to the cantilever member by an adjusting knob. The other end of the second shaft is connected to a clamping shoe disposed within the clamping mechanism.

The clamping shoe partially surrounds the swivel portion of the swivelable first shaft. To selectively position the flexible material retaining mechanism, the adjusting knob is loosened and the retaining mechanism is positioned as desired. The adjusting knob is then tightened causing the clamping shoe to engage the swivel portion of the first shaft and lock the swivel portion in-place.

An edge tool may, if desired, be used in concert with the present invention to provide stretching or added weight to the flexible material positioned within the confines of the retaining mechanism. The edge tool may, if desired, be an elongated shaft with a channel or slot disposed along its longitudinal length. One edge of a substantially rectangular flexible sleeve is mounted into the channel or slot. The other edge of the sleeve, oppositely spaced from the channel or slot, is detachably secured to one edge of the flexible material. During the insertion process of the flexible material into the retaining mechanism the edge tool may, if desired, be connected to the material to stretch, pull, or provide weight to the edge of the material facilitating the mounting of the material into the retaining mechanism.

When taken in conjunction with the accompanying drawings and the appended claims, other features and advantages of the present invention become apparent upon reading the following detailed description of embodiments of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention is illustrated in the drawings in which like reference characters designate the same or similar parts throughout the figures of which:

FIG. **1** illustrates a perspective view diagram of the preferred embodiment of the present invention,

FIG. **2** illustrates a perspective exploded view diagram of the quilting material retaining mechanism of FIG. **1**,

FIG. **3***a* illustrates a perspective view diagram of the inner hoop and adjustable outer hoop of FIG. **2**,

FIG. **3***b* illustrates a top view diagram of the inner hoop and adjustable outer hoop of FIG. **3***a*,

FIG. **3***c* illustrates a top view diagram of the outer hoop of FIG. **3***a*,

FIG. **3***d* illustrates a top view diagram of the inner hoop of FIG. **3***a*,

FIG. **4** illustrates a perspective view diagram of the cantilever member of FIG. **1**,

FIG. **5** illustrates a perspective view diagram of the cantilever member mounted to the footed stand of FIG. **1**,

FIG. **6** illustrates a partial exploded perspective view diagram of the footed stand of FIG. **1**,

FIG. **7** illustrates a perspective view diagram of the footed stand of FIG. **1**,

FIG. **8** illustrates a perspective view diagram of the preferred embodiment in a first folded position for storage,

FIG. **9** illustrates a perspective view diagram of the preferred embodiment in a second folded position for storage,

FIG. **10** illustrates a perspective view diagram of the preferred embodiment in a third folded position for storage,

FIG. **11** illustrates a sectional front view diagram of the clamping mechanism of FIG. **1**,

FIG. **12** illustrates a sectional top view diagram of FIG. **11**,

FIG. **13** illustrates a sectional side view diagram of FIG. **11**,

FIG. **14** illustrates a sectional bottom view of FIG. **11**,

FIG. **15** illustrates a top view diagram of the clamping shoe of FIG. **11**,

FIG. **16** illustrates a sectional end view diagram of FIG. **15**,

FIG. **17** illustrates a perspective view diagram of an edge tool.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT OF THE PRESENT INVENTION

Before describing in detail the particular improved apparatus for positionally retaining flexible material in accordance with the present invention, it should be observed that the invention resides primarily in a novel structural combination of conventional flexible material retaining apparatuses, discrete subsystems or subassembly components, associated control of the aforementioned flexible material retaining apparatus and components, and not in the particular detailed configuration thereof. Accordingly, the structure, command, control, and arrangement of these conventional components and subassemblies have, for the most part, been illustrated in the drawings by readily understandable diagram representations and schematic diagrams. The drawings show only those specific details that are pertinent to the present invention in order not to obscure the disclosure with structural details which will be readily apparent to those skilled in the art having the benefit of the description herein. For example, the flexible material **12**, FIG. **3***a* has numerous portions or sections that may be used in the process of quilting. Only one portion of the flexible material **12** is illustrated in order to simplify and emphasize those portions of the present invention **10** that are most pertinent. Thus, the schematic diagram illustrations of the Figures do not necessarily represent the mechanical structural arrangement of the exemplary system, and are primarily intended to illustrate major hardware structural components of the system in a convenient functional grouping whereby the present invention may be more readily understood.

An Overview of the Present Invention

The preferred embodiment of the present invention **10**, FIG. **1** is an apparatus for positionally retaining flexible material. Typically, a person, user, or quilter positions herself adjacent to a substantially rectangular footed stand member **16** in a standing or sitting position. The present invention **10** may, if desired, be conveniently adjusted to numerous positions to accommodate a standing or seated user. The flexible material may, if desired, be placed within the confines of the retaining mechanism **14**. Any type of flexible material known in the art may be used in concert with the present invention **10**. Examples of flexible material are cotton, wool, canvass, plastic, thin wood, thin metal, or polymer composite. The user may, if desired, adjust a clamping mechanism **17** to position or rotate the retaining mechanism to any convenient position.

The substantially rectangular footed stand member **16** has an upright substantially rectangular portion **47** selectively connected to a substantially T-shaped footed portion **49**. The substantially rectangular footed stand member **16** has one end of an elongated cantilever member **18** connected to the upright rectangular portion **47**. The other end of the cantilever member **18** is connected to the retaining mechanism **14** via the adjustable clamping mechanism **17**. The retaining mechanism **14** may, if desired, be selectively positioned about the clamping mechanism **17**. The vertical position of the retaining mechanism **14** may, if desired, be selected by adjusting the cantilever member **18** relative to the T-shaped footed portion **49**.

A More Detailed Discussion of the Present Invention

The Retaining Mechanism

The retaining mechanism **14**, FIG. **2** has an elongated arcuately shaped upper bracket **19** with a positioning notch **20** disposed along its longitudinal length. Preferably, the positioning notch **20** is centrally located with respect to the

end points **21** and **22**. The end points **21** and **22** are of sufficient size to accommodate the securing of an inner hoop **28**, FIG. **3***a*. The end points **21** and **22** may, if desired, have an aperture disposed therethrough for connecting the upper bracket **19** to the inner hoop **28**.

The retaining mechanism **14** has an elongated arcuately shaped lower bracket **24** with a positioning notch **27** disposed along its longitudinal length. Preferably, the positioning notch **27** is centrally located with respect to the its end points **25** and **26**. The end points **25** and **26** are of sufficient size to accommodate the securing of an inner hoop **28**, FIG. **3***a*. The end points **25** and **26** may, if desired, have an aperture disposed therethrough for connecting the lower bracket **24** to the inner hoop **28**. The positioning notches **20** and **27** may, if desired, be positioned in an overlying relationship thereby enabling the weight of the quilting material to be evenly distributed along the longitudinal length of the upper and lower brackets **19** and **24** respectively.

A lower bracket plate **29** has a molded or machined top surface **33** sculpted to accommodate portions of the lower bracket **24** and upper bracket **19**. An upper bracket plate **30** has a similar top surface (not shown) to accommodate portions of the lower bracket **24** and the upper bracket **19**. When the upper and lower bracket plates **29** and **30** are assembled about the upper and lower brackets **19** and **24**, they provide a securing mechanism for the aforementioned upper and lower brackets. The upper and lower bracket plates **29**, **30**, and the upper and lower brackets **19** and **24** have an aligned aperture disposed therethrough. The clamping mechanism **17** has an elongated swivel first shaft **33** extending outwardly. The first shaft **33** traverses the bracket apertures and the brackets are held in place by a retaining washer **32** and first retaining nut **31**.

The inner hoop **28**, FIG. **3***a* may, if desired, be any convenient physical geometry. Preferably, the inner hoop **28** is substantially rectangular in shape with rounded corners. Inner hoop **28** has an inner surface **33** surrounding an open area or cavity. The inner hoop **28** also has a plurality of holes (not shown) through which screws may be inserted to securely connect upper and lower brackets **19** and **24**. The inner hoop **28**, FIG. **3***d* has an outer surface that is divided into **8** distinct sections or walls that are contiguous with each other. Each pair of distinct walls is joined at an outwardly extending union along the longitudinal length of the pair of joined walls. The outward extending union is in the range of 2° to 10° (degrees) measured from the horizontal. Preferably, the angle of elevation from the horizontal is about 4° (degrees). The outer surface wall **110** joins outer surface wall **111** at **118** at an elevation angle of about 4° **156**, FIG. **3***d*. Joined to one end of wall **111** is one end of a rounded corner wall **119** and joined at the other end of wall **110** is one end of round corner wall **122**. The rounded corner **119** is connected to the outer wall **112** which joins outer wall **113** at **200** at an elevation angle of about 4°. Joined to one end of wall **113** is one end of a rounded corner wall **120**. The rounded corner **120** is connected to the outer surface wall **114** which joins outer wall **115** at **120** at an elevation angle of about 4°. Joined to one end of wall **115** is one end of a rounded corner surface wall **121**. The rounded corner surface wall **121** is connected to the outer surface wall **116** which joins outer surface wall **117** at **119** at an elevation angle of about 4° (degrees). Joined to one end of wall **117** is one end of the rounded corner wall **122**. The inner hoop **28** has four distinct outwardly extending ledges connected at a 90° (degree) angle from the surface of each pair of outer surface walls. Each ledge conforms to the angular elevation of each pair of outer walls. The ledge **126** is outwardly extending from outer surface walls **111** and **110** at an angle of 90° (degrees). The ledge **123** is outwardly extending from outer surface walls **112** and **113** at an angle of 90° (degrees). The ledge **124** is outwardly extending from outer surface walls **114** and **115** at an angle of 90° (degrees). The ledge **125** is outwardly extending from outer surface walls **116** and **117** at an angle of 90° (degrees). The four outwardly extending ledges are sufficiently sized to receive the outer hoop **35**. The 4 ledges extend outward from the surface of their respective surface walls about 1/16 to ½ inch. Preferably, the ledges extend outward about ⅛ inch.

The retaining mechanism **14** has an outer hoop **35**, FIG. **3***a* that is sized to fit over the inner hoop **28**. The outer hoop **35** may, if desired, be the same or different geometry as the inner hoop **28**. Preferably, the outer hoop **35** is substantially rectangular in shape with an inner surface **36** and an outer surface **37**. The inner surface **36** surrounds an opening or cavity that is sized to overlay the inner hoop **28**. The outer hoop **35**, FIG. **3***c* has an inner surface that is divided into 8 distinct sections or walls that are contiguous with each other. Each pair of distinct walls is joined at an outwardly extending union along the longitudinal length of the pair of joined walls. The outward extending union is in the range of 2° to 10° (degrees) measured from the horizontal. Preferably, the angle of elevation from the horizontal is about 4° (degrees). The inner surface wall **127** joins inner surface wall **126** at **134** with an elevation angle measured from the horizontal of about 4° **155**, FIG. **3***c*. The inner surface wall **132** joins inner surface wall **133** at **186**. The inner surface wall **131** joins inner surface wall **130** at **137**. The inner surface wall **128** joins inner surface wall **129** at **138**. Each pair of inner surface walls **126**, **127**, **130**, **131**, **128**, and **129** are joined to rounded corners **139**, **140**, **141**, and **142** respectively. The rounded corner **142** may, if desired, have an adjusting mechanism **38** disposed therein. The adjusting mechanism **38** comprises, in part, an adjusting slot **144**, adjusting shaft **145** (not shown), and adjusting knob **148**, FIG. **9**. The adjusting shaft **146** traverses the adjusting slot **144**. The adjusting knob **143** is disposed about the adjusting shaft **145** at **146**. If desired, the adjusting mechanisms **38** component parts may be recessed within the interior of the mechanism to prevent snagging of material that would overlay the mechanism during operation. Rotating adjusting knob **143** expands or contracts the adjusting slot **144** which expands or contracts the overall diameter of the outer hoop **35**.

The inner surfaces of the outer hoop **35** (discussed above) abut the outer surfaces of the inner hoop **28** (discussed above) and come to rest on the outwardly extending ledges **123**, **124**, **125**, and **126**. The adjusting knob **143** is rotated (discussed above) and the outer hoop **35** is adjustably secured about inner hoop **28**. When the outer hoop **35** is positioned over the inner hoop **28** the rounded corners **139**, **140**, **141**, and **142** of the outer hoop **35** are spaced from the rounded corners **119**, **120**,**121**, and **122** of the inner hoop **28**. The gaps **147**, **148**,**149**, and **150** are formed between the respective spaced apart rounded corners. The range of the gap between any two spaced apart rounded corners is in the range of 1/32 to about ¾ inch. Preferably, the gap is about ⅛ inches.

The selected portion of the flexible material **12** may, if desired, be positioned between the inner hoop **28** and the outer hoop **35**. Preferably, the weave of the material **12** is aligned at right angles to the inner hoop's **28** inner surface walls. Positioning the material in this manner enables the material to retain its form without stretching due to contact with present invention **10**. The outer hoop **35** is positioned

over the material **12** and the inner hoop **28** coming to rest on the ledges **123**, **124**, **125**, and **126**. The adjusting knob **143**, in concert with the adjusting slot **144** tighten the outer hoop **35** about the inner hoop **28**. The material **12** disposed in gaps **147**, **148**, **149**, and **150** is adjustable secured in the gaps but is not engagingly secured by the rounded pairs of spaced apart rounded corners. Securing the corners of the material **12** in this in this manner preserves the form of the material without stretching the material.

The retaining mechanism **14** may be fabricated from any convenient material known in the art. The surfaces of the retaining mechanism **14** may be machined, polished, painted or rough honed. Examples of material that may be used to fabricate the retaining mechanism are wood, metal, plastic, or composite polymer.

The Cantilever Member

The cantilever member **18**, FIG. **4** is substantially rectangular in shape. The cantilever member **18** may, if desired, be fabricated from the same or different material as the retaining member **14**. The clamping mechanism **17** mounts to one end of the cantilever member **18**. The other end of the cantilever member **18** is sized to accommodate horizontal adjustment controls **44** and **43** respectively. This end of the cantilever member **18** has a handle **45** mounted thereto for carrying the present invention **10** when it is in a folded position (discussed herein). An aperture or hole **42** is provided at one end of the cantilever member **18** for insertion of a second shaft **41** of the clamping mechanism **17** (discussed herein). The second shaft **41** freely slides or traverses along the inner walls of the hole **42**. A knob **39** adjustably secures the clamping mechanism **17** to the cantilever member **18**.

The vertical adjustment **43** is ratchet controlled. A knob **46** is mounted onto a threaded shaft extending outward from upright substantially rectangular portion **47** of the substantially rectangular footed stand member **16**. The knob **46** may be selectively loosened and the cantilever member **18** may then be ratcheted up or down with respect to the horizontal plane. The range of vertical displacement provided by the ratchet control is in the range from 0 to about 20 inches. Retaining wing nut **43** mounted to a second threaded shaft extending outward from the upright substantially rectangular portion **47** along with knob **46** may be loosened, if desired, and the cantilever member **18** may be rotatively adjusted along slot **48**. This rotative adjustment enables the cantilever member **18** to be positioned vertically relative to the user. The vertical displacement or distance traveled in the vertical plane is 2 to about 24 inches.

The Substantially Rectangular Footed Stand Member

The substantially rectangular footed stand member **16**, FIG. **5** has a substantially T-shape footed portion **49** with a substantially elongated rectangular upright portion **47** mounted thereto. The substantially rectangular footed stand member **16** may, if desired, be fabricated from the same or different material as the retaining member **14**. The T-shape footed portion **49**, FIG. **6** has a first elongated substantially rectangular member **50** comprising a top surface **52** and a bottom surface **53**. The first elongated substantially rectangular member **50** has a pair of oppositely spaced apart protuberances or feet **54** and **55** extending outward from the bottom surface **53**. The feet **54** and **55** partially support the weight of the present invention **10**. The first elongated substantially rectangular member **50** has one end sized to accommodate an arcuate slot **56** and spaced therefrom a longitudinal slot **57**. The substantially rectangular footed stand member **16** has a second elongated substantially rectangular member **51**, FIG. **7**. The second rectangular member **51** has at least one slot **58** disposed along one edge. The second rectangular member **51** has a pair of oppositely spaced apart protuberances or feet **91** and **92** extending outward from the bottom surface **93**. The feet **91** and **92** partially support the weight of the present invention **10**. The feet **91** and **92**, in concert with feet **54** and **55**, support the weight of the present invention **10** when in the upright position. The second rectangular member **51** is mounted onto one end of the first rectangular member **50** in such a way as to form a T-shape. The elongated rectangular upright portion **47** has one end inserted into an open area disposed in one end of the first rectangular member **50**. A headed first threaded shaft or hex head bolt **59** traversing the arcuate slot **56** and the rectangular upright portion **47** is adjustably secured by a wing nut **61**. A headed second threaded shaft or hex head bolt **60** traversing the elongated slot **57** and the rectangular upright portion **47** is adjustably secured by a wing nut **62**. Loosening the wing nuts **61** and **62** enables the user to either horizontally position the present invention **10** relative to the user or fold the footed portion **49** against the rectangular stand member **49**. To lock the rectangular upright portion **47** in the upright position or perpendicular to the footed stand portion **49** a third threaded shaft or hex head bolt **64** traverses the rectangular upright portion **47** and the second rectangular member **51** and is securely tightened by a wing nut **63**.

To fold the present invention **10** from an unfolded or first position into a convenient folded or second position sized for transport or storage, the retaining mechanism **14**, FIG. **8** is positioned along the cantilever member **18**. The substantially rectangular footed stand member **16**'s substantially T-shaped footed portion **49** is folded along the substantially rectangular upright portion **47**. The adjusting knob **46** is loosened and the cantilever member **18** is folded along the rectangular upright member **47**, FIG. **9** locking the first rectangular portion **49** against the rectangular upright portion **47**. The second rectangular member **51** is positioned along the rectangular upright member **47**, FIG. **10** and securely connected at one end by retaining notch **64**. The other end of the second rectangular member **51** is connected to hex bolt **64** and held securely in place by wing nut **63**. The present invention **10** may now be transported using handle **45**, FIG. **9**.

The Clamping Mechanism

The clamping mechanism **17**, FIG. **1** enables the retaining mechanism **14** to rotate about swivel shaft **33**, FIG. **11**, 360° (degrees) in the horizontal plane and 360° (degrees) in the vertical plane relative to T-shaped portion **49** of the substantially rectangular footed stand member **16**. The clamping mechanism **17** may, if desired, be fabricated from the same or different material as the retaining member **14**. The swivel shaft **33** has a molded or attached substantially spherically shaped ball **70** disposed at one end. A housing **71** has a top wall **72**, a bottom wall **73**, a front wall **74**, and a swivel end wall **75** that partially subtend or partially surround the ball **70**. The swivel shaft **33** extends through an opening in the top wall **72**. The opening is sufficiently sized to permit the swivel shaft **33** in concert with the ball **70** to rotate 360° in the horizontal plane. The swivel shaft **33** may, if desired, be rotated 90° through an opening in the front wall **74**. The opening in the front wall **74** is continuous or contiguous with the opening in the top wall **72**. The opening in the front wall **74** is sufficiently sized to permit the swivel shaft **33** in concert with the ball **70** to rotate 360° in the vertical plane. The swivel shaft **33** may, if desired, be secured in any selected or desired position from either opening in the top or front walls **72** and **74** respectively. The interior of the housing **71** is sized to receive a clamping shoe **76**, FIG. **12**.

The clamping shoe **76** is spaced between the top wall **72** and the bottom wall **73**. The clamping shoe **76** has a top and bottom surface that enables it to slide along the interior surfaces of the top and bottom walls **72** and **73**, respectively. The length of travel of the clamping shoe **76** may, if desired, extend from the front wall **74** to the swivel wall **75**. The clamping shoe **76**, FIG. **15** is substantially Ω (omega) shaped with an interior wall **78** and an exterior wall **77**. The walls of the Ω-shaped clamping shoe **76** form an end portion or end wall **82** oppositely spaced from an opening **84**. The end wall **82** has an aperture or hole **86** disposed therein. The aperture is sized to receive the adjusting shaft **41**, FIG. **4**. Adjusting shaft **41** has a head portion **88**, FIG. **16** that is connected to the end wall **82**. The interior wall **78** contiguous with the end wall **82** forms an interior cavity with one end open at **84**. The interior wall **78** is adjacently spaced from the surface of the ball **70**. The interior wall **78** has two oppositely spaced apart end portions **86** and **87** extending outward from the opening **84** towards the exterior wall **77**. When the clamping shoe **76** is positioned in the housing **71**, the end portions **86** and **87** extend beyond the opening in the front wall **74**. The end portions **86** and **87** in a first position abut the opening of the front wall **74** in such a way that no pressure or tension is applied to the clamping shoe **76**. When adjusting knob **39** is rotated in one selected direction the end wall **82** moves toward the swivel end wall **76**. This movement causes a retraction of the end portions **86** and **87** towards the opening **84** accordingly applying pressure or tension on the clamping shoe **76**. The interior wall **78** engages the outer surface of the ball **70** in a second position clamping the ball **70** in-place.

An edge tool **94**, FIG. **17** once properly affixed to the flexible material **12** enables it to be stretched over the inner hoop **28**. The edge tool **94** may, if desired, be fabricated from the same or different material as the retaining member **14**. The edge tool **94** has a substantially rectangular shape with a channel or groove **96** disposed along one edge of the tool **94**. A substantially rectangular cloth sleeve **99** has one edge **97** connected to groove **96**. The other edge **100** oppositely spaced from edge **97** may, if desired, be connected to the material **12** by a plurality of pins **98**. The edge tool **94** drapes over the edge of the inner hoop **28** and stretches the material **12**. The outer hoop **35** is then properly positioned and retained about the inner hoop (as discussed above). If desired a plurality of edge tools **94** may be used to stretch the material **12** over the inner hoop **28**.

The best mode of operation of the present invention **10** is to unfold it from the folded position discussed herein. The present invention **10**, in the unfolded position has the substantially T-shaped footed portion **49** disposed in the horizontal plane with the substantially rectangular portion **47** connected thereto in the vertical plane. The substantially rectangular portion **47** has disposed at one end the cantilever member **18**. The cantilever member **18** has the flexible material retaining mechanism **14** connected at one end via the clamping mechanism **17**.

The flexible material **12** is placed over the inner hoop **28** with the desired number of edge tools **94** connected about its perimeter. The outer hoop **35** is positioned over the inner hoop **28**, resting on edge **34**. The outer hoop **35** is then adjustably secured about the inner hoop **28** by adjusting knob **143**.

The user may, if desired, position the retaining mechanism **14** to any convenient position in the vertical or horizontal plane. One means of positioning the retaining mechanism **14** is by loosening adjusting knob **39** of the clamping mechanism **17** thereby disengaging the clamping shoe **76** from the surface of the ball **70**. Once the clamping shoe **76** is disengaged the swivel shaft **33** may be conveniently positioned. Another means of positioning the retaining mechanism relative to the user is by loosening the adjusting knob **46** and ratcheting the cantilever member **18** up or down to a convenient position. The adjusting knob **26** is tightened and the present invention **10** is now ready for use.

Although only a few exemplary embodiments of this invention have been described in detail above, those skilled in the art will readily appreciate that many modifications are possible in the exemplary embodiments without materially departing from the novel teachings and advantages of this invention. Accordingly, all such modifications are intended to be included within the scope of this invention as defined in the following claims, means-plus-function clause is intended to cover the structures described herein as performing the recited function and not only structural equivalents but also equivalent structures. Thus, although a nail and a screw may not be structural equivalents in that a nail employs a cylindrical surface to secure wooden parts together whereas a screw employs a helical surface, in the environment of fastening wooden parts, a nail and a screw may be equivalent structures.

I claim:

1. An apparatus for positionally retaining flexible material, comprising:

a) a substantially rectangular footed stand member;

b) an elongated cantilever member having one end adjustably disposed along said footed stand member's rectangular portion;

c) a clamping mechanism having an outwardly extending swivelably mounted first shaft, said clamping mechanism having disposed therein an adjustable clamping shoe engaging said first shaft's swivel portion;

d) said adjustable clamping shoe having a second shaft extending outwardly from said clamping mechanism, said second shaft connectively disposed along said cantilever member;

e) a retaining mechanism adjustably disposed to said clamping mechanism's first shaft, said retaining mechanism adjustably securing the flexible material;

thereby said retaining mechanism being selectively positionable about said clamping mechanism by adjusting said clamping shoe, said retaining mechanism being vertically selectively positionable by adjusting said cantilever member along said footed stand member's rectangular portion.

2. An apparatus as recited in claim **1** wherein said substantially rectangular footed stand member comprises an elongated rectangular member perpendicularly mounted to a footed stand member.

3. An apparatus as recited in claim **2** wherein said footed stand member defined as a T shaped member formed by a substantially elongated rectangularly shaped header member perpendicularly disposed to a substantially rectangular shaped base member.

4. An apparatus as recited in claim **3** wherein said header member having disposed along one edge at least one notch, said base member having disposed at one end at least one notch, said header member's notch adjoined to said base member's notch.

5. An apparatus as recited in claim **4** wherein said base member having disposed therein at least one arcuately shaped aperture, said base member further having disposed therein at least one slot, said notch and said slot each having disposed therethrough a retaining device, said notch retain-

ing device in concert with said slot retaining device arcuately positioning said rectangular member relative to footed stand member.

6. An apparatus as recited in claim **5** wherein said cantilever member's adjustable end is an arcuately shaped ratchet working in concert with at least one securing mechanism providing adjustable positioning of said cantilever member.

7. An apparatus as recited in claim **6** wherein said clamping mechanism, comprises:

a) a substantially rectangular housing having a top wall, a bottom wall, a first end wall, and a second end wall, said walls mounted in such a way as to form an interior cavity;

b) said clamping shoe being slidably disposed between said top and said bottom walls;

c) said clamping shoe's second shaft slidably extending through said first wall, said first wall being swivelably disposed to said cantilever member; and

d) said swivelably mounted first shaft having a first position extending through a first aperture of said top wall, said swivelably mounted first shaft having a second position rotated perpendicular to said top wall and extending through a channel connecting said first aperture to a second aperture in said second wall.

8. An apparatus as recited in claim **7** wherein said retaining mechanism, comprises:

a) an arcuately shaped outer bracket;

b) an arcuately shaped lower bracket;

c) an upper bracket plate and a lower bracket plate;

d) said upper and lower arcuately shaped brackets medially disposed to said upper and lower bracket plates;

e) said upper and lower arcuately shaped brackets and said upper and lower bracket plates having an aligned aperture extending therethrough, said swivelably mounted first shaft traversing said aperture;

f) said upper and lower bracket plates and said upper and lower arcuately shape brackets being adjustably secured to said swivelably mounted first shaft;

g) an inner hoop member securely mounted to said upper and lower arcuately shaped brackets; and

h) an outer hoop member adjustably disposed about said inner hoop member.

9. An apparatus as recited in claim **8** wherein said inner hoop member being formed by four spaced apart sidewalls in a substantially rectangular shape, each said sidewall being connected to subsequent sidewalls via rounded corner walls, said sidewalls having outer surfaces selectively extending outwardly.

10. An apparatus as recited in claim **8** wherein said outer hoop member being formed by four spaced apart sidewalls in a substantially rectangular shape, each said sidewall being connected to subsequent sidewalls via rounded corner walls, said sidewalls having outer surfaces selectively extending outwardly.

11. An apparatus as recited in claim **10** wherein said outer hoop member's rounded corner walls in concert with said inner hoop member's rounded corner walls form a cavity therebetween.

12. An apparatus as recited in claim **11** said inner hoop member having an outwardly extending ledge engaging said outer hoop member.

13. An apparatus as recited in claim **8** further comprising:

a) an edge tool having at least one elongated shaft having a slot longitudinally disposed along one side;

b) a substantially rectangular flexible sleeve having a first edge connectively disposed to said slot;

c) said sleeve having a second edge oppositely spaced from said first edge; and

d) said second edge connectively disposed to the flexible material; thereby said shaft providing tension to the flexible material and stretching the material about said inner hoop.

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