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(54) CASE OR RACK FOR PANELS

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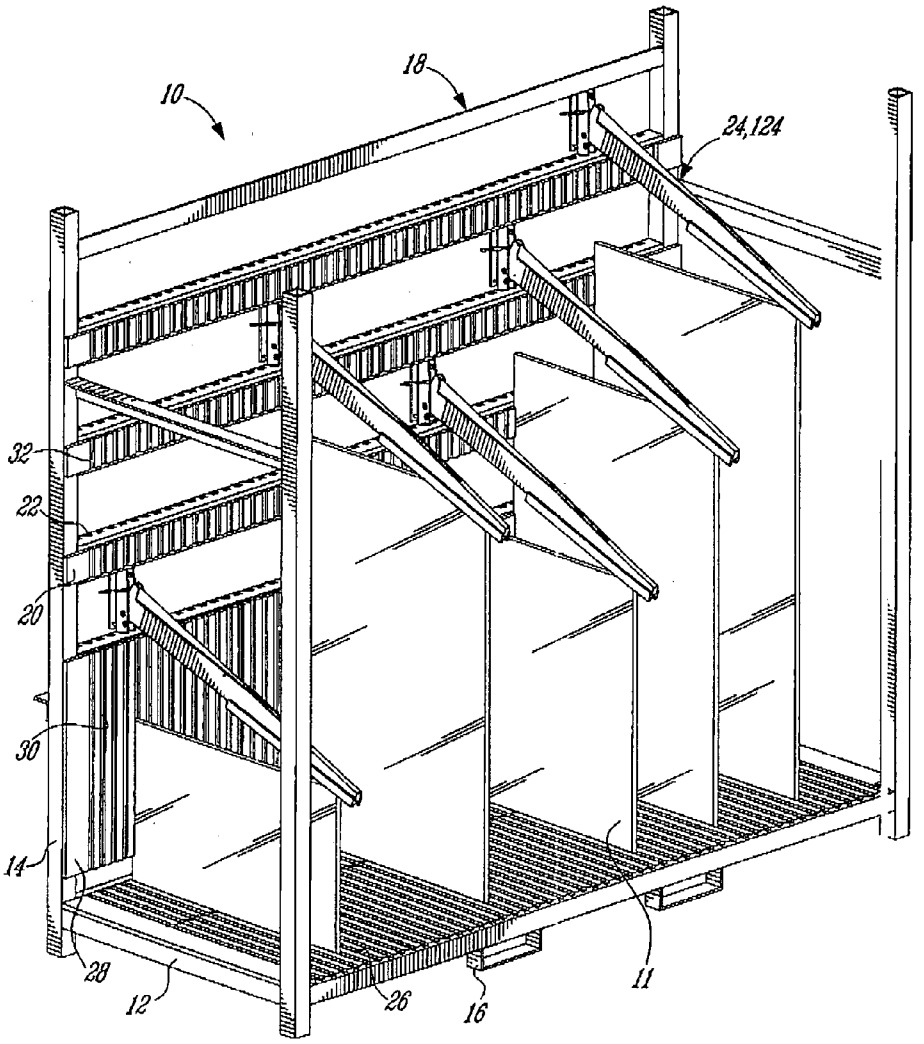
(57) **ABSTRACT**

The present invention includes a rack for storing panels, comprising a base having a top surface, a rear structure vertically extending from the base, a plurality of supports in at least one of the top surface of the base and the rear structure for supporting the panels in a vertical position, and a plurality of arms extending from the rear structure for engaging top edges of the panels to retain the panels in the vertical position. The present invention therefore allows for easy and selective access to a desired panel, or small group of panels, regardless of the number and disposition of the other panels within the rack. A method for storing panels within a rack is also presented.



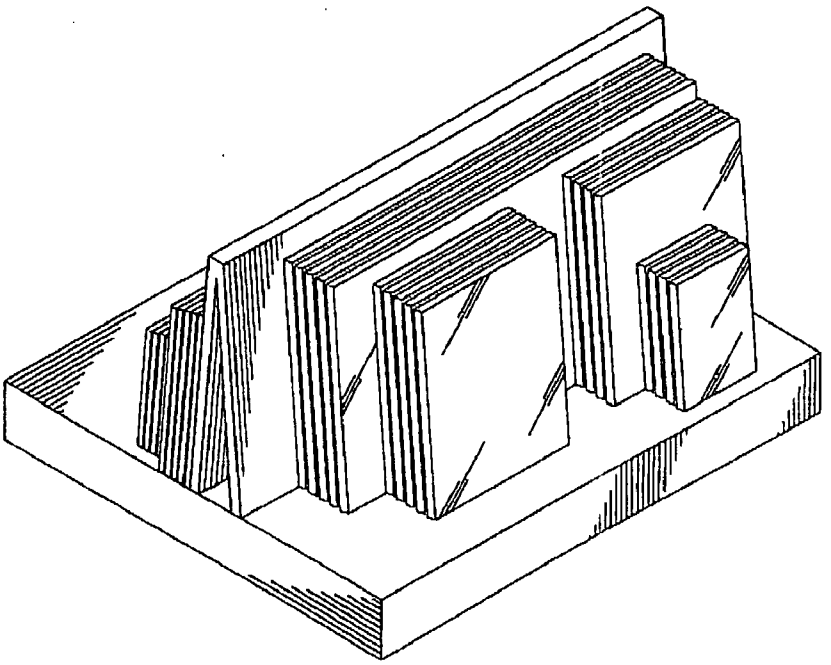


Fig. 1 PRIOR ART

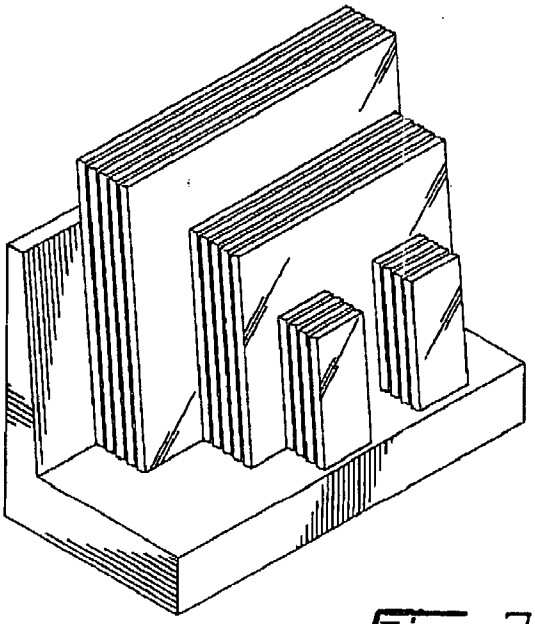


Fig. 2 PRIOR ART

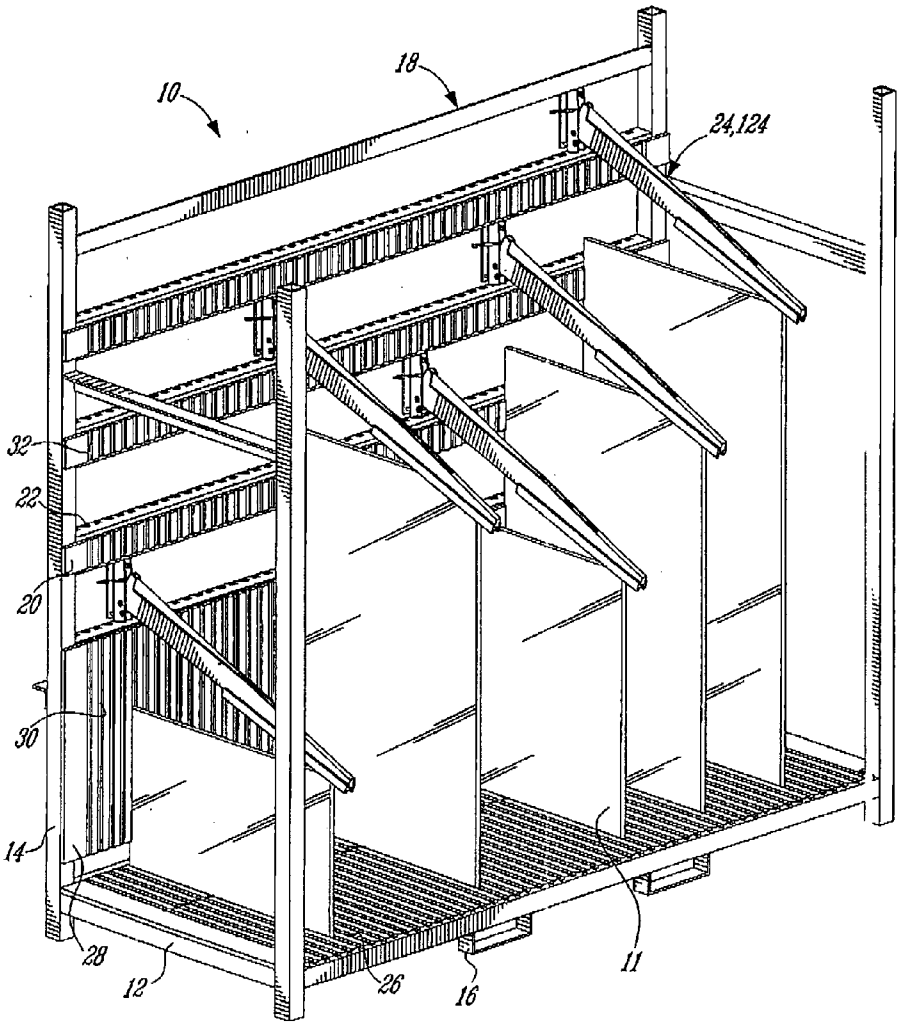


Fig. 3A

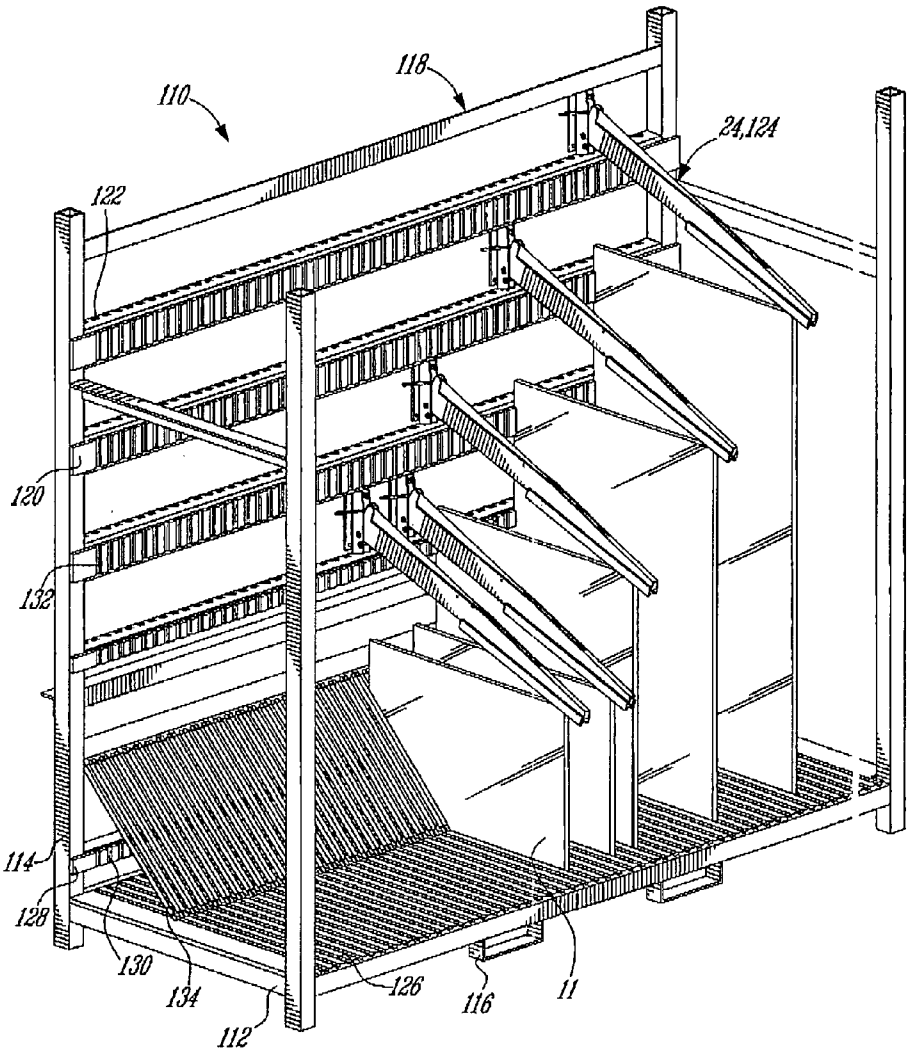


Fig. 3B

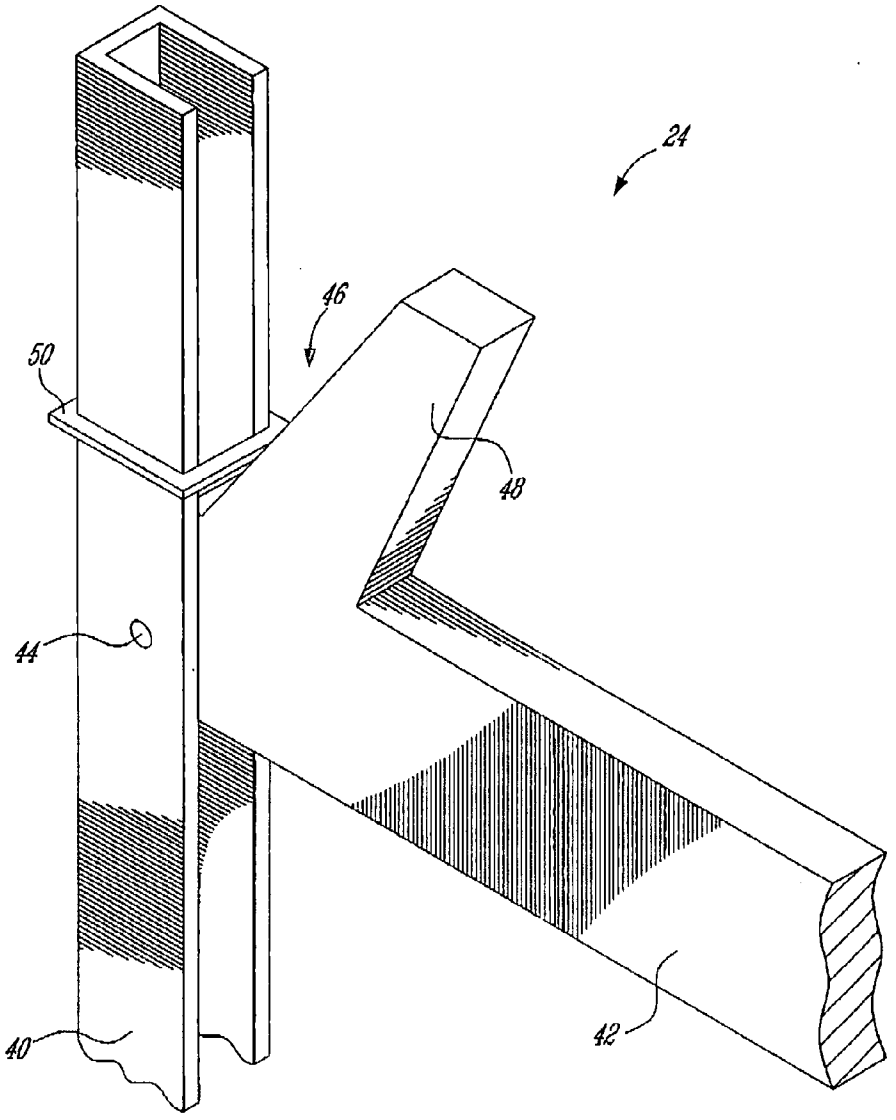


Fig. 4A

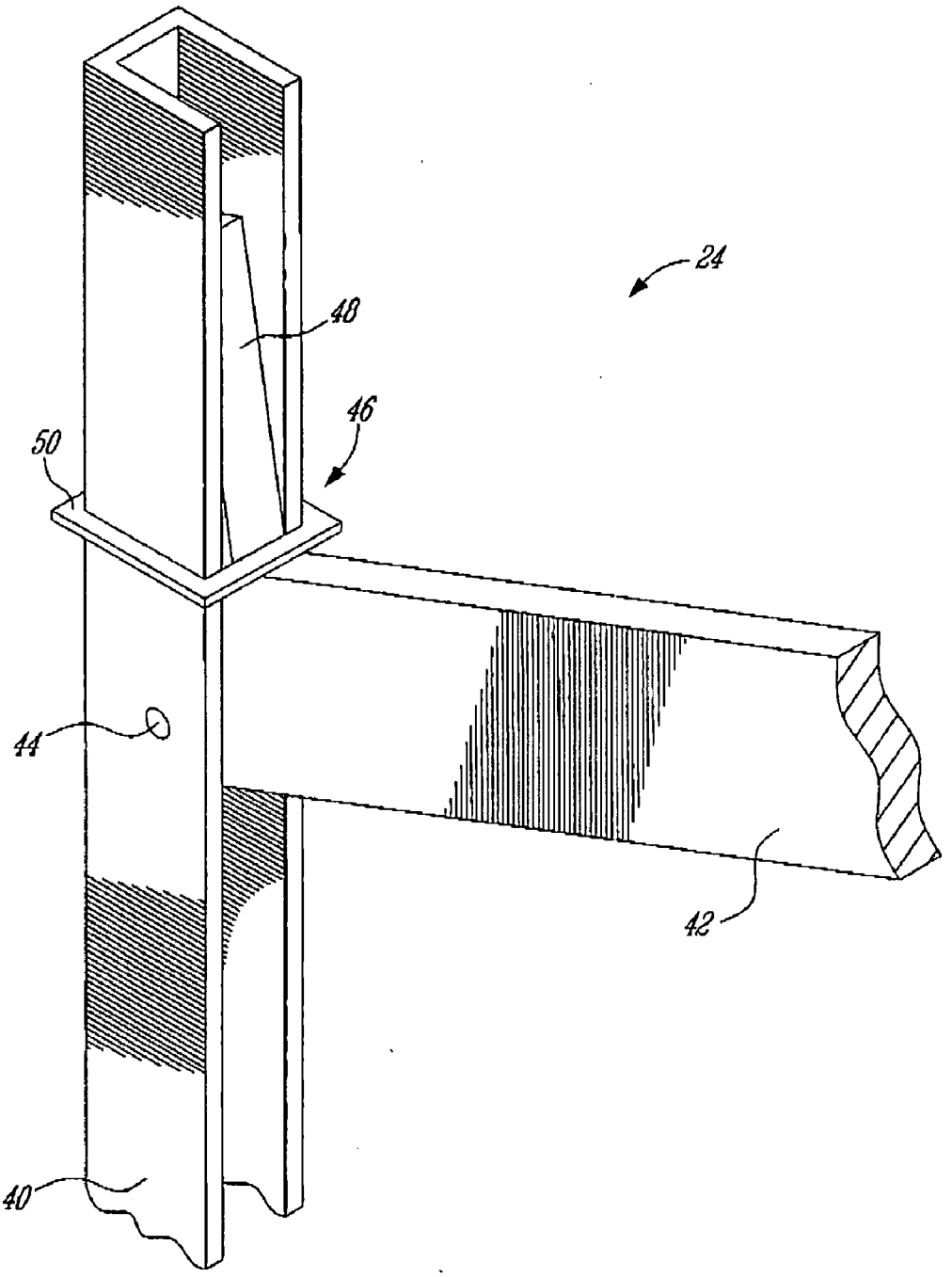


Fig. 4B

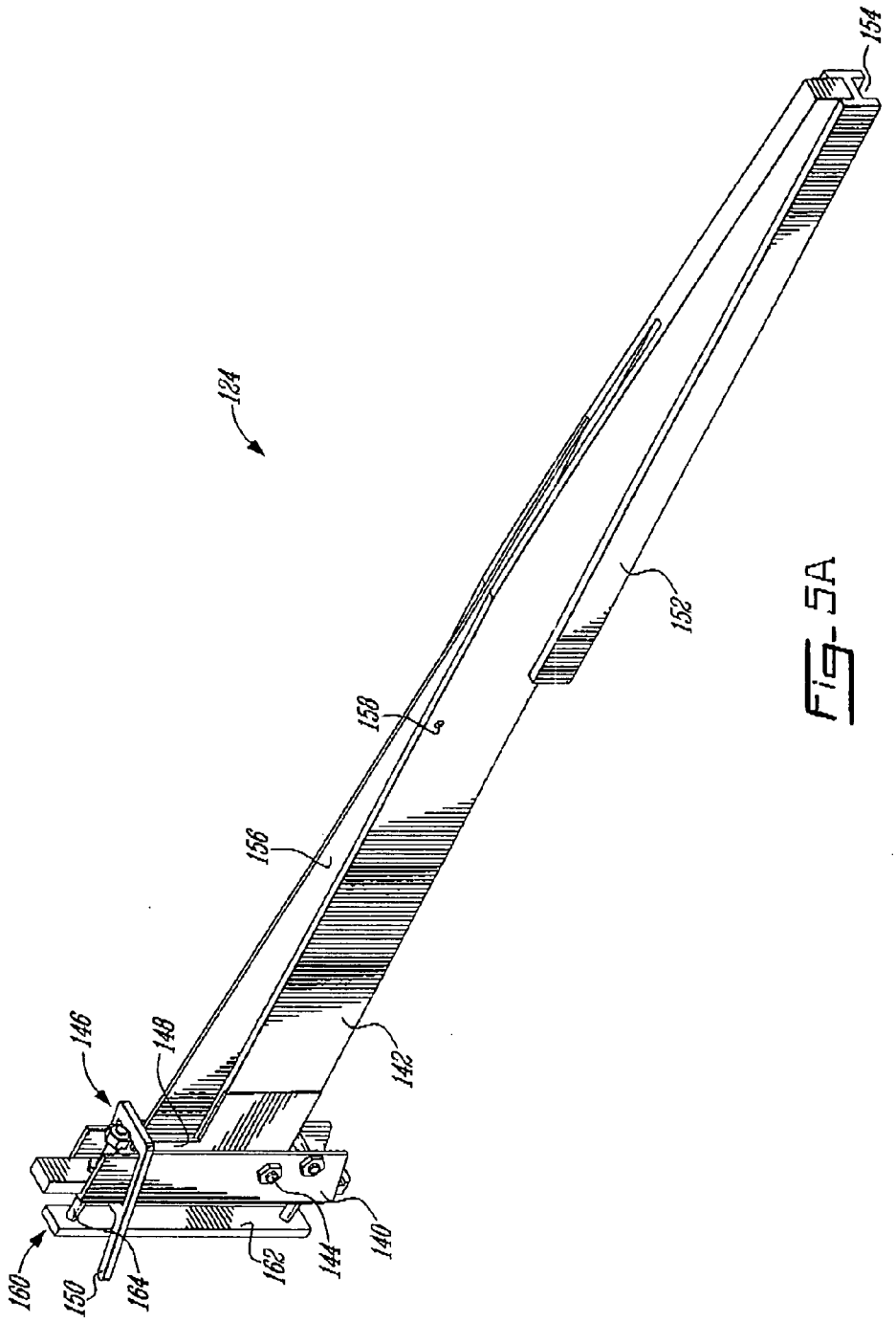


Fig. 5A

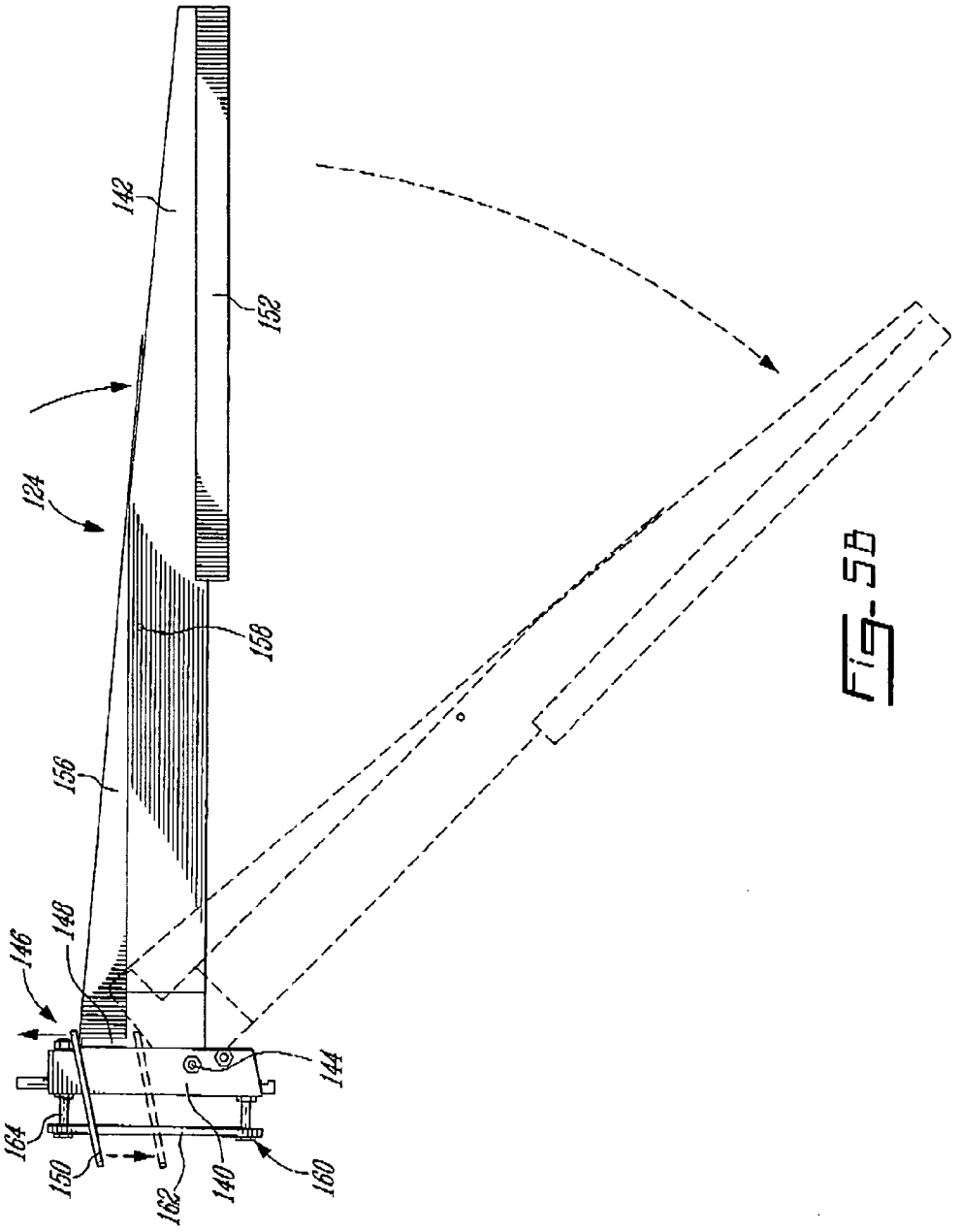


Fig. 5B

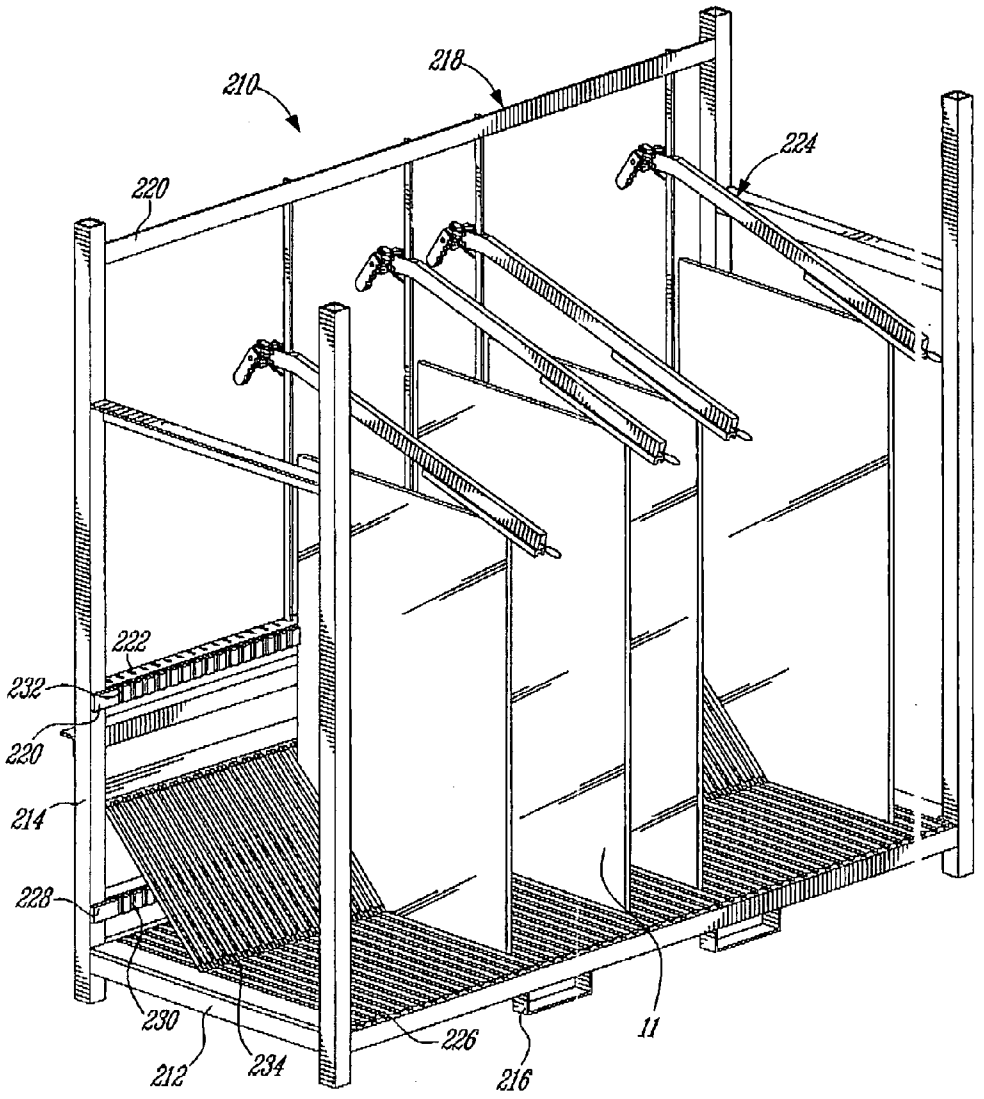


Fig. 6

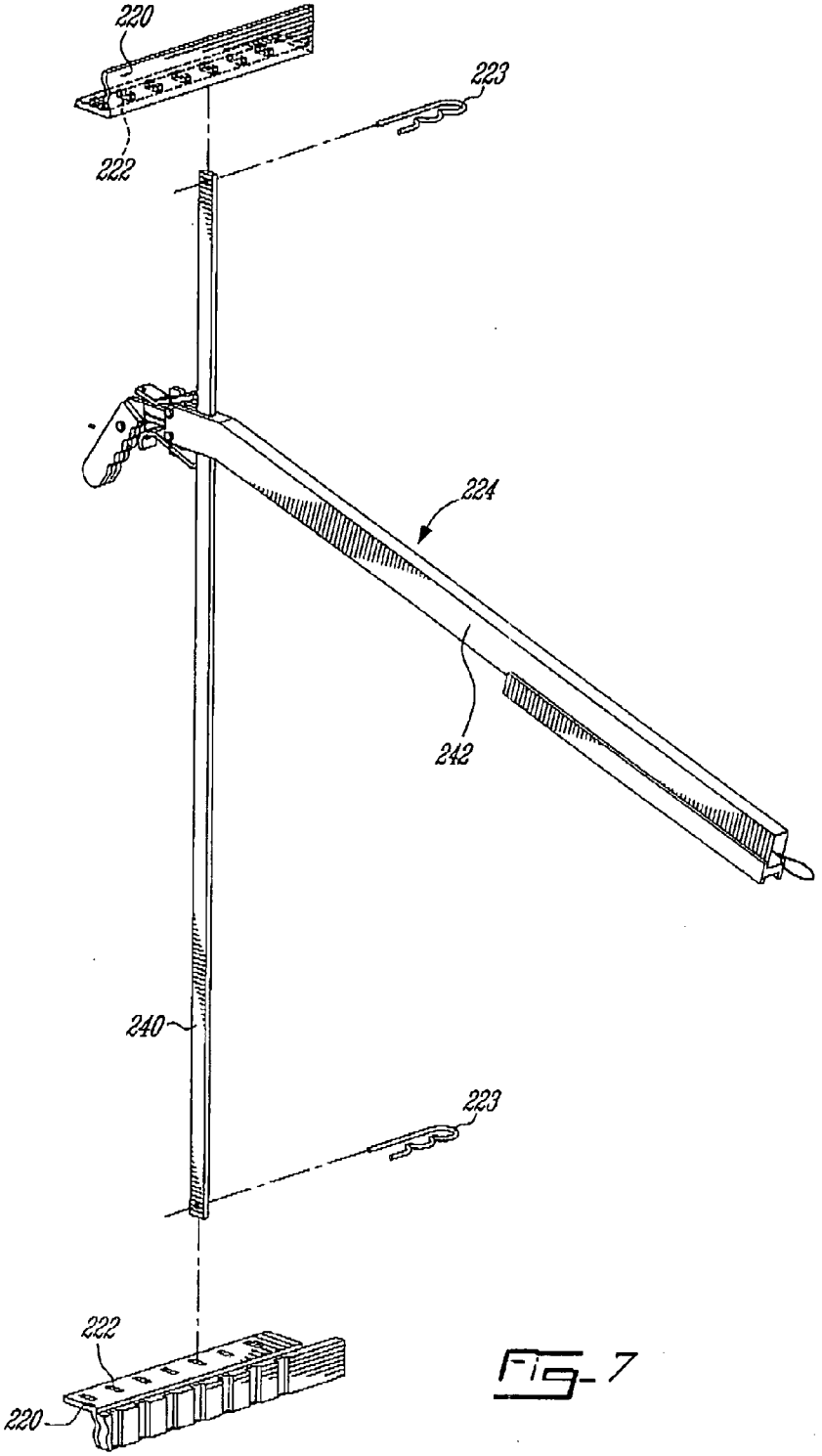


Fig. 7

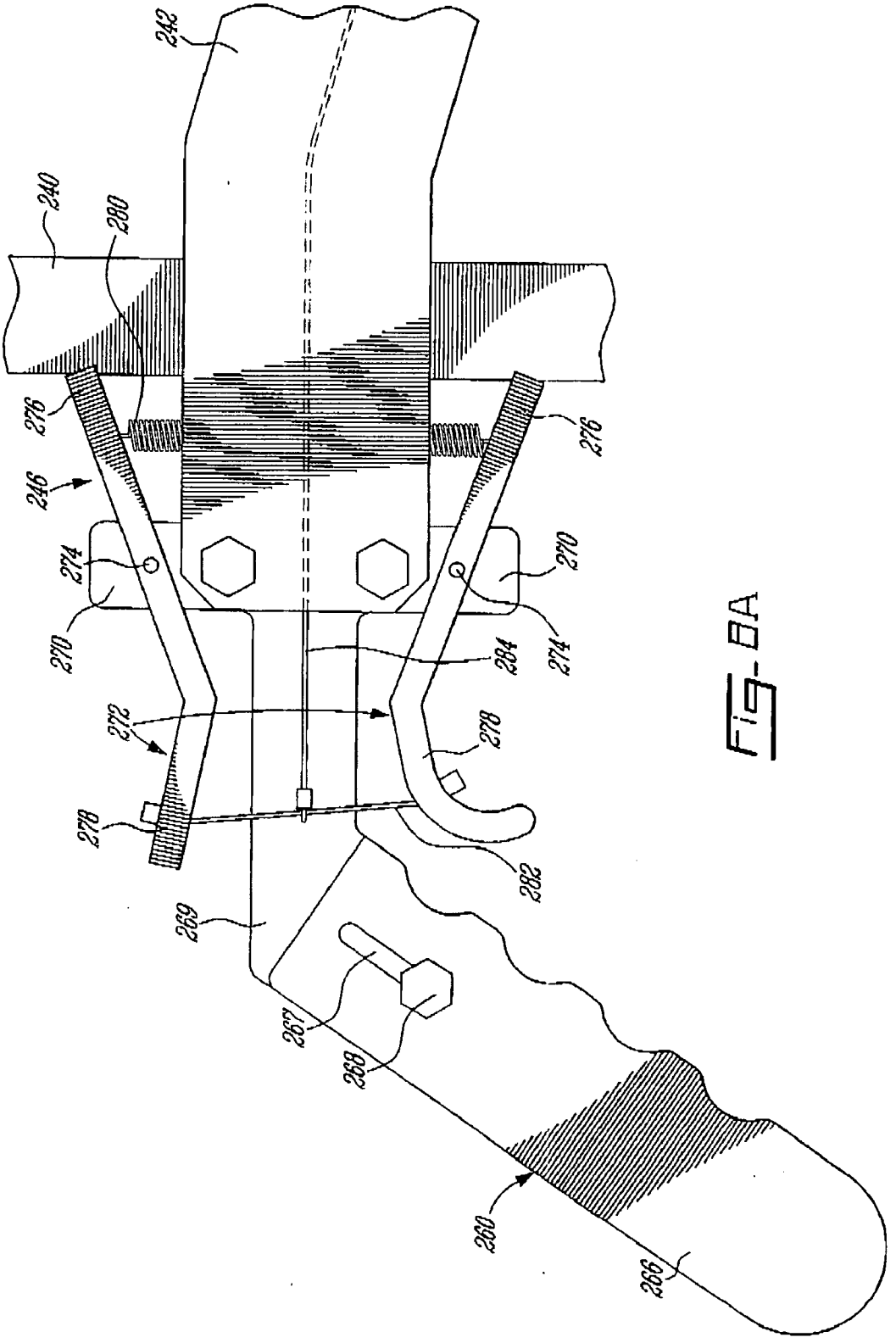

242
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Fig. 8A

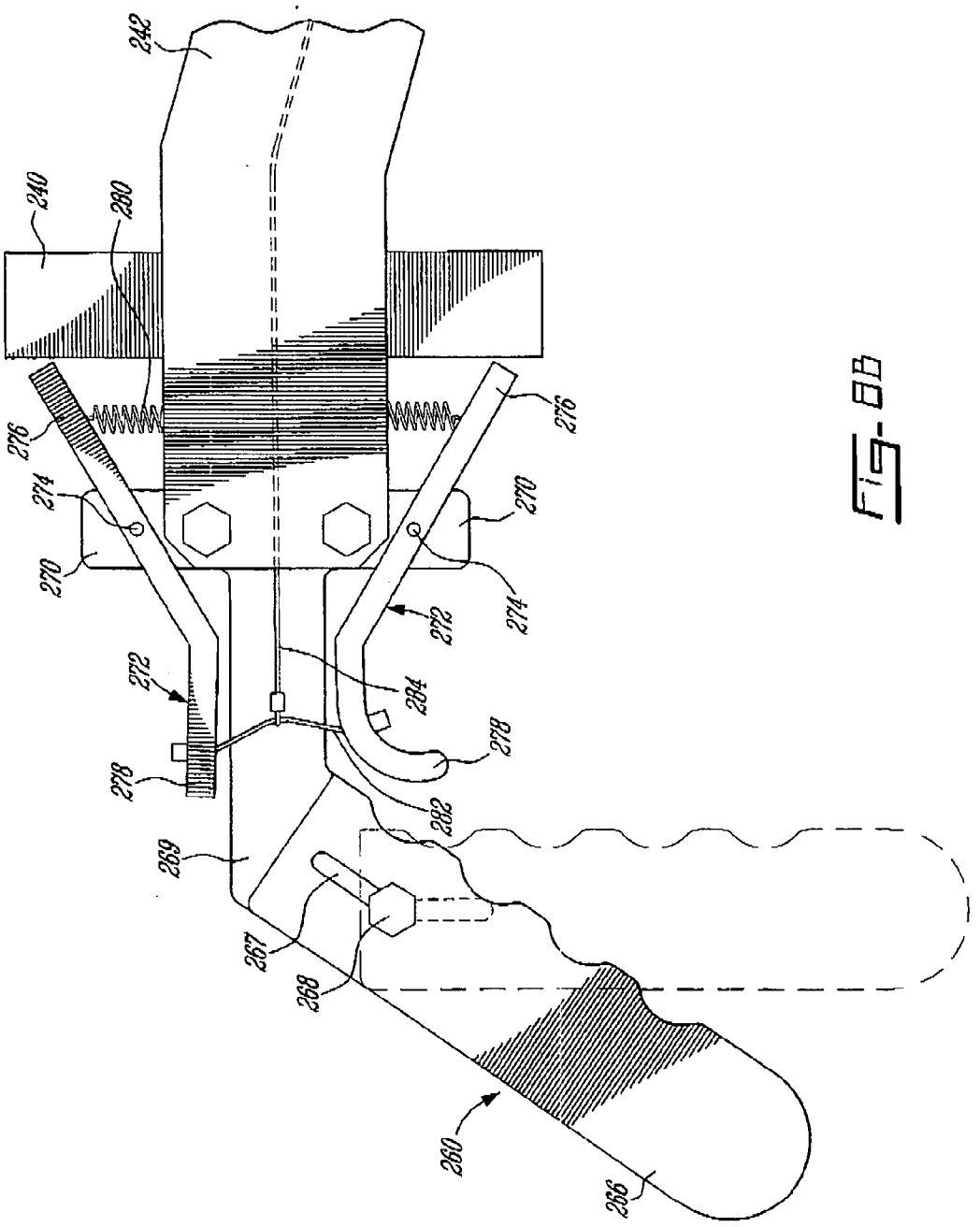
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Fig-8B

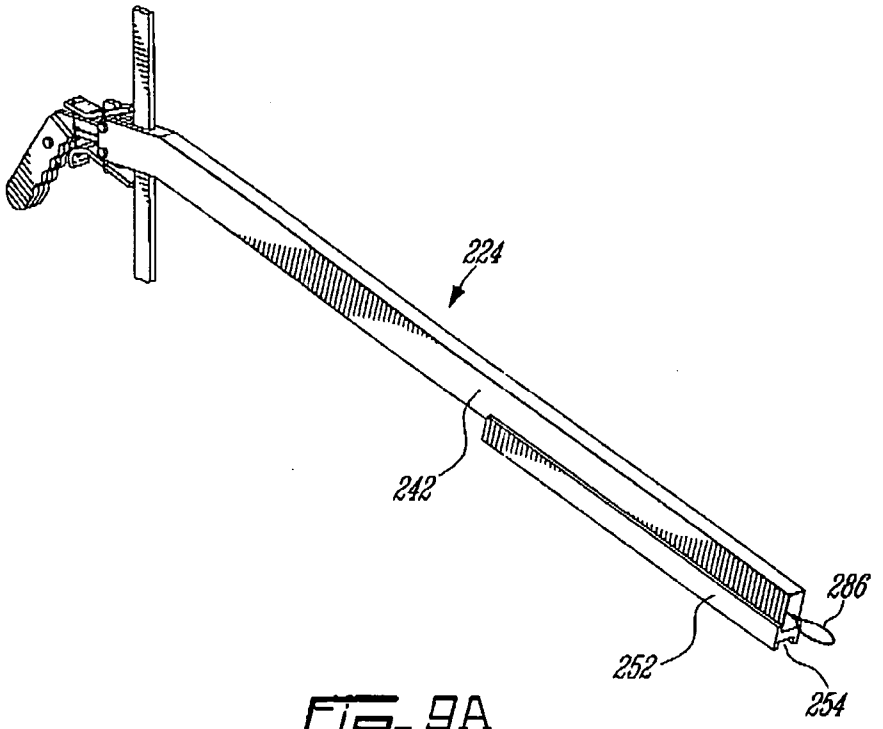

Fig. 9A

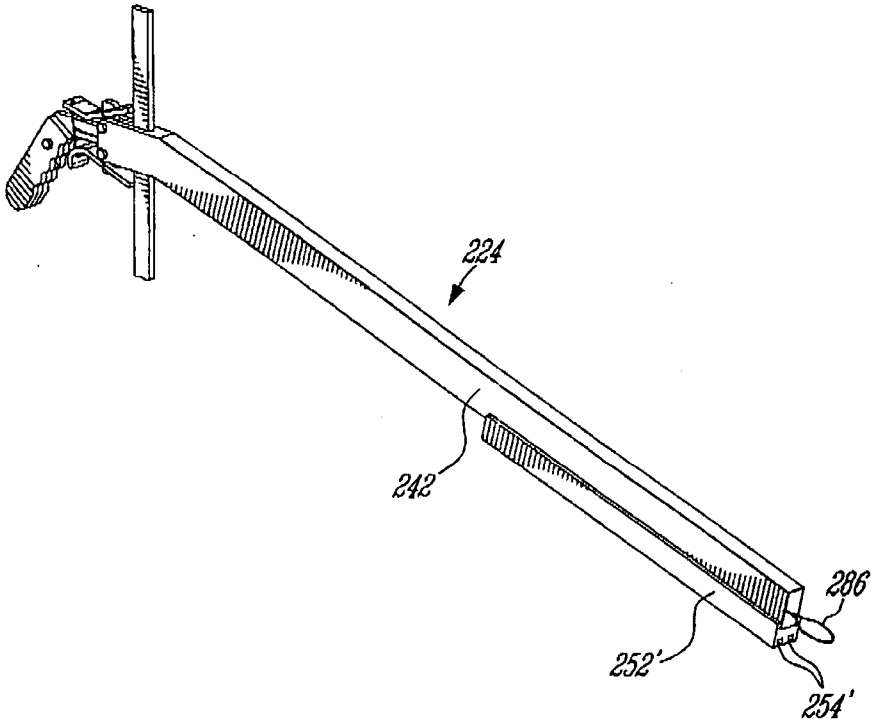

Fig. 9B

CASE OR RACK FOR PANELS

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention relates to case or racks for storing panels, particularly glass panels. The invention also relates to a method for storing said panels.

[0003] 2. Background Art

[0004] Racks for glass panels usually receive the panels leaning against one another in a near-vertical fashion. **FIG. 1** illustrates an A-frame and **FIG. 2 a** L-frame, both of which are well known. When these frames are used with different sized panels, the larger panels are usually placed first against the frame, with progressively smaller panels in front. Because the panels are leaning one against another, getting access to the panels placed at the rear generally involves moving all the panels in front, which increases manipulation time and effort as well as the risk of damaging one or several panels.

[0005] Accordingly, there is a need for rack for storing panels which allows easy access to a desired panel.

SUMMARY OF INVENTION

[0006] It is therefore an aim of the present invention to provide an improved rack for storing panels.

[0007] Therefore, in accordance with the present invention, there is provided a rack for storing panels, comprising a base having a top surface, a rear structure vertically extending from the base, a plurality of supports in at least one of the top surface of the base and the rear structure for supporting the panels in a vertical position, and a plurality of arms extending from the rear structure for engaging top edges of the panels to retain the panels in the vertical position.

[0008] Further in accordance with the present invention, there is provided a method for storing panels within a rack having a base and a rear structure, the method comprising the steps of placing each panel in a vertical position on the base, at least one of a rear edge and a bottom edge of the panel being supported by supports of the rack, engaging a top edge of each panel with a movable arm connected to the rear structure, and locking the movable arm against the top edge of the panel to retain the panel in the vertical position.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] Reference will now be made to the accompanying drawings, showing by way of illustration a preferred embodiment of the present invention and in which:

[0010] **FIG. 1** is a schematic perspective view of a frame for holding panels in accordance with the prior art;

[0011] **FIG. 2** is a schematic perspective view of a second frame for holding panels in accordance with the prior art;

[0012] **FIG. 3A** is a perspective view of a rack for holding panels in accordance with a first embodiment of the present invention;

[0013] **FIG. 3B** is a perspective view of a rack for holding panels in accordance with a second embodiment of the present invention;

[0014] **FIG. 4A** is a perspective view of a first embodiment of an arm used in the rack of **FIG. 3A** or **FIG. 3B**, in a rotated position;

[0015] **FIG. 4B** is a perspective view of the arm of **FIG. 4A**, in an elevated locked position;

[0016] **FIG. 5A** is a perspective view of a second embodiment of an arm used in the rack of **FIG. 3A** or **FIG. 3B**, in an elevated locked position;

[0017] **FIG. 5B** is a side elevation view of the arm of **FIG. 5A**, showing the arm in the elevated locked position in plain lines and in a rotated position in broken lines;

[0018] **FIG. 6** is a perspective view of a rack for holding panels in accordance with a third embodiment of the present invention;

[0019] **FIG. 7** is a perspective exploded partial view showing the installation of an arm in the rack of **FIG. 6**;

[0020] **FIG. 8A** is a side elevation partial view of an arm used in the rack of **FIG. 6**, in a locked position;

[0021] **FIG. 8B** is a side elevation partial view of the arm of **FIG. 8A**, in an unlocked position, and showing a second position of the handle in broken lines;

[0022] **FIG. 9A** is a perspective view of the arm of **FIG. 8A**, with an elongated member for supporting a single panel;

[0023] **FIG. 9B** is a perspective view of the arm of **FIG. 9A** with a different elongated member for supporting two panels.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0024] Referring to **FIG. 3A**, a first embodiment of a rack for holding panels **11** such as glass sheets or sealed glass panel units is generally indicated at **10**. The rack **10** comprises a base **12** supported by four (4) vertical posts **14**. Members **16** can also be provided to be eventually engaged by the fork of a lift truck and ease the handling of the rack **10**. Two (2) of the vertical posts **14**, located at the rear side of the base **12**, support a rear structure **18** extending vertically from the base **12**.

[0025] The rear structure **18** comprises a plurality of horizontal bars **20** and a vertical plate **28** which extend between the rear vertical posts **14**. The vertical plate **28** is preferably adjacent to a top surface of the base **12**. The horizontal bars **20** are located higher than the plate **28** and are regularly spaced apart. The horizontal bars **20** each include a plurality of aligned slots **22** on a top and a bottom side thereof. A plurality of arms **24**,**124** are received between adjacent horizontal bars **20** and retained in corresponding slots **22** in the bottom side of the top bar and the top side of the bottom bar. The arms **24**,**124** extend from the rear structure **18** over the base **12**. The height of each arm **24**,**124** can be varied by selectively retaining the arm **24**,**124** between different adjacent horizontal bars **20**.

[0026] A plurality of parallel horizontal grooves **26** are defined in the top surface of the base **12**. Each horizontal groove **26** extends substantially perpendicularly to the rear structure **18**. A plurality of parallel vertical grooves **30** are defined in the vertical plate **28** such that each vertical groove **30** is aligned with a corresponding horizontal groove **26**.

Each horizontal groove **26** is preferably sized to receive the bottom edge of a single panel **11**, and each vertical groove **30** is preferably sized to receive the rear edge of a single panel **11**. However, it is also considered to have grooves **26,30** which each receive more than one panel edge. Advantageously, additional parallel vertical grooves **32** may be provided on a front surface of the horizontal bars **20**. Each vertical groove **32** is aligned with the corresponding vertical grooves **32** of the other horizontal bars **20** as well as the corresponding vertical groove **30** of the vertical plate **28**. The grooves **26,30,32** form supports which are designed to receive the panels **11** in a vertical position, perpendicularly to the rear structure **18**.

[**0027**] **FIG. 3B** shows a second embodiment of the rack **110**. Like in the previous embodiment, the rack **110** comprises a base **112** supported by four vertical posts **114**. It further comprises member **116** similar to member **16** of the previous embodiment. A rear structure **118** extends vertically from the base **112** and comprises a plurality of horizontal bars **120** including aligned slots **122**. A plurality of arms **24,124** are retained in corresponding slots **122** such as to extend from the rear structure **118** over the base **112**. Supports formed of horizontal grooves **126** in the top surface of the base **112**, vertical grooves **130** in a vertical plate **128**, and additional vertical grooves **132** in a front surface of the horizontal bars **120** receive the panels **11** in a vertical position.

[**0028**] Additional support is also provided in the rack **110** to receive the panels. This additional support consist in a plurality of parallel rods **134** extending between the top surface of the base **112** and the rear structure **118**. The rods **134** preferably extend at an angle of substantially forty-five (45) degrees from the top surface of the base **112**. The rods **134** are placed so as to be between adjacent horizontal grooves **126**, such that a panel **11** resting in a groove **126** will be supported between two rods **134**. Each rod **134** is preferably made of metal and surrounded by soft material such as plastic material, to avoid damage to the panels. The vertical plate **128** containing the vertical grooves **130** can be smaller than in the previous embodiment. The vertical plate **128** can also be omitted.

[**0029**] FIGS. **4**A-B show a first embodiment of the arms **24** which can be used in the rack **10** as illustrated in **FIGS. 3A** or the rack **110** as illustrated in **FIG. 3B**. Each arm **24** comprises a vertical bar **40** which has a U-shaped section and is designed to be received in the corresponding slots **22,122** of the horizontal bars **20,120** of the rack **10,110** (see FIGS. **3**A-B). An elongated body **42** is connected to the vertical bar **40** by a pivot **44**. The elongated body **42** includes on a bottom edge thereof a groove (not shown) which is designed to engage a top edge of a panel **11**. When the arm **24** is connected to the rear structure **18,118**, the groove is aligned with the corresponding groove **26,126** on the top surface of the base **12,112**. The arm **24** thus retains the panel **11** in corresponding grooves **26,30,32** or **126,130,132** of the rack **10,110** such as to maintain the panel **11** within the grooves in a vertical position. Alternatively, as illustrated, the vertical bar **40** may comprise two distinct parts. A first part having a U-shaped section. Another part being a vertical member extending at both ends of the first part to define tongues for engagement with slots **22**, **122**.

[**0030**] A locking mechanism **46** prevents the arm **24** from pivoting upwards and releasing the panel **11**, and can also serve to retain the arm **24** in a somewhat horizontal position when it is not resting against a panel. The locking mechanism **46** includes an angled finger **48** and a ring **50**. The angled finger **48** is integral with the elongated body **42** and forms an acute angle therewith such as to extend up and toward the free end of the arm **24**. The angled finger **48** is sized so as to penetrate within the U-shaped section of the vertical bar **40** when the arm **24** is sufficiently pivoted upward. The ring **50** closely surrounds the vertical bar **40** and is free to move in a vertical direction. Thus, when the arm **24** is rotated down about the pivot **44**, the angled finger **48** is moved away from the vertical bar **40**, allowing the ring **50** to slide down between the finger **48** and the vertical bar **40**, as illustrated in **FIG. 4A**. When the arm **24** is sufficiently rotated up about the pivot **44** such that the finger **48** is contained within the vertical bar **46**, the ring **50** can be slid down so as to retain the finger **48** within the bar **40**, thus maintaining the arm **24** in a somewhat horizontal position as illustrated in **FIG. 4B**.

[**0031**] In use, the ring **50** is brought upward to free the finger **48** so that the arm **24** can be rotated about the pivot **44**. As illustrated in FIGS. **3**A-B, a panel **11** is placed such that its bottom edge and rear edge are received in corresponding grooves **26,30,32** or **126,130,132** of the rack **10,110**. The arm **24** is then rotated down until the groove of the elongated body **42** receives the top edge of the panel. While the arm **24** rotates down, the ring **50** slides down between the vertical bar **40** and the finger **48**. The ring **50** will then prevent the finger **48** from moving back toward the vertical bar **40**, thus preventing the arm **24** from rotating back up, as illustrated in **FIG. 4A**. The locked arm **24** will insure that the panel **11** is retained in the grooves **26,30,32** or **126,130,132** of the rack. To unlock the arm **24** against a panel, the ring **50** is moved upwardly, the arm **24** is rotated upwardly and the ring **50** is engaged on the finger **48**.

[**0032**] FIGS. **5**A-B show a second embodiment of the arms **124** which can be used in the rack **10** as illustrated in **FIGS. 3A** or the rack **110** as illustrated in **FIG. 3B**. Like in the previous embodiment, each arm **124** comprises a U-shaped vertical bar **140** to be received in the corresponding horizontal bar slots **22,122**. An elongated body **142**, connected to the vertical bar **140** by a pivot **144**, includes on a bottom side thereof a removable elongated member **152** with a groove **154** designed to engage the top edge of a panel **11**. Alternatively, the elongated member **152** can be replaced by a second elongated member having, for example, a groove of a different width, or two grooves such as to support two panels with a single arm. Alternatively, the vertical bar **140** may be similar to the vertical bar **40** previously defined.

[**0033**] The arm **124** may also includes a handle **160** to facilitate manipulation. The handle **160** preferably comprises a metal plate **162** which is retained on the back of the arm **124** by two bolts **164**.

[**0034**] A locking mechanism **146** prevents the arm **124** from pivoting upwards and releasing the panel **11**. The locking mechanism **146** includes a finger **148** provided on the top of the elongated body in proximity to the vertical bar **140**. The locking mechanism **146** also includes a tapered member **156** which is inserted in a groove on top of the elongated body **142** and attached to the body **142** by a pivot **158**. The wider end of the tapered member **156** is adjacent

to the finger **148**, with the finger **148** extending higher than the tapered member **156** when the member is in an equilibrium position with respect to the pivot **158**. The locking mechanism **146** also includes a ring **150** closely surrounding the vertical bar **140** and, when the arm **124** is not in use, retaining the finger **148** within the vertical bar **140** to maintain the arm **124** in a somewhat horizontal position, as shown in **FIG. 5A** and in plain lines in **FIG. 5B**. When the ring **150** is disengaged from the finger **148**, the arm **124** freely rotates down about the pivot **144** while the ring **150** slips between the elongated body **142** and the vertical bar **140**, as shown in broken lines in **FIG. 5B**.

[**0035**] Before use, the ring **150** is slid upward to release the finger **148** so that the arm **124** can be rotated. The ring **150** can be slid upward by pressing down against the tapered end of the tapered member **156**. The tapered member **156** will thus rotate around the pivot **158**, bringing the larger end of the tapered member **156** up, which will lift the ring **150** and release it from the finger **148**. The arm **124** is then used similarly to the arm **24**, i.e. the arm **124** is rotated up about the pivot **144**, a panel **11** is placed with its bottom edge and rear edge in corresponding grooves **26**,**30**,**32** or **126**,**130**,**132** of the rack **10**,**110**, and the arm **124** is rotated down until the groove **154** in the elongated member **152** of the elongated body **142** engages the top edge of the panel **11**. The ring **150**, by slipping between the arm **124** and the vertical bar **140**, will prevent the arm **124** from pivoting back up as illustrated in **FIG. 5A**, insuring that the top edge of the panel **11** remains in the groove **154** of the arm **124**. The panel **11** is thus efficiently retained in the grooves **26**,**30**,**32** or **126**,**130**,**132** of the rack **10**,**110** by the arm **124**. To unlock the arm against a panel, the ring **150** is slid upwardly, the arm **124** is rotated upwardly and the ring **150** is engaged on finger **148**. Advantageously, it is possible to unlock the arm **124** from the front of the rack.

[**0036**] Referring to **FIG. 6**, a third embodiment of the rack **210** is shown. The rack **210** also comprises a base **212** supported by four vertical posts **214**. Members **216** are similar to member **16** previously defined. A rear structure **218** extends vertically from the base **212**. The rear structure **218** of this embodiment comprises two spaced apart horizontal bars **220**, which include aligned slots **222** in a top and a bottom surface thereof. A plurality of arms **224** are retained by the two horizontal bars **220** in aligned slots **222** such as to extend from the rear structure **2138** over the base **212**. Like in the previous embodiments, supports formed of horizontal grooves **226** in the top surface of the base **212**, vertical grooves **230** in a vertical plate **228**, and additional vertical grooves **232** in a front surface of the horizontal bars **220** receive the panels in a vertical position. Like in the rack **110**, a plurality of parallel rods **234** extending between the top surface of the base **212** and the rear structure **218** can also be provided.

[**0037**] The height adjustment of the arms, which was discrete and limited to the installation of each arm between a desired pair of horizontal bars in the previous embodiments, is provided here directly by the arm design. As shown in **FIGS. 6-7**, each arm **224** comprises a vertical bar **240** which is designed to be received in the corresponding slots **222** of the horizontal bars **220** and retained therein by pins **223**. An elongated arm body **242** is slidably mounted on the vertical bar **240** by receiving the bar **240** in a slot slightly spaced apart from the rear end of the body **242**. The height of the arm **224** can thus be easily varied by vertically sliding the arm **224** on the vertical bar **240**.

[**0038**] Referring to **FIG. 8A**-B, a locking mechanism **246** blocks the arm **224** at a desired height on the vertical bar **240**. The locking mechanism **246** comprises a pair of ears **270**, the first ear **270** extending vertically upward and the second ear **270** extending vertically downward from the rear end of the elongated body **242**. Each ear **270** supports a lever **272** connected thereto by a pivot **274**. Each lever **272** has a first end **276** and a second end **278**, with the second ends **278** being angled away from one another. Both first ends **276** are connected together by a spring **280** which forces them toward one another. The force of the spring **280** brings the first ends **276** in contact with the vertical post **240** such as to retain the arm **224** at a desired height, as shown in **FIG. 8A**.

[**0039**] The locking mechanism is released by bringing the second ends **278** toward one another against the resistance of the spring **280**. This effectively rotates the levers **272** about the pivots **274** such that the first ends **276** are displaced away from one another and from the vertical post **240**. While the contact between the first ends **276** and the vertical post **240** is broken, the arm **224** can freely slide up and down on the vertical post **240**, as shown in **FIG. 8B**

[**0040**] Although the second ends **278** can be brought toward one another by exerting a direct force thereon, such as by a pinching motion, they can also be brought toward one another through a release system from the front end of the elongated body **242**. The release system comprises first and second wires **282**,**284**. The first wire **282** has one end connected to each of the second ends **278** of the levers **272**. The first wire **282** must be long enough so as not to prevent the pivoting motion of the levers **272** caused by the spring **280** pressing the first ends **276** against the vertical bar **240**. The second wire **284** is attached to the middle of the first wire **282** and extends within the elongated body **242**, with a free end of the second wire **284** coming out at the front end of the body **242**. Preferably, a loop **286** is formed in the free end of the second wire **284** to facilitate manipulation (see FIGS. **9**A-B) A pulling force applied on the second wire **284** through the loop **286** pulls on the middle of the first wire **282**. The two ends of the first wire **282**, and thus the second ends **278** of the levers **272** they are attached to, are brought toward one another, as can be seen in **FIG. 8B**. Therefore, it is possible to manipulate the arm **234** from the rear or the front of the rack **210**.

[**0041**] It is also considered to replace the first wire **282** by equivalent mechanical means, such as a pair of members pivotally connected to one another and pivotally connected to a respective one of the second ends **278** of the levers **272**.

[**0042**] Each arm **224** also includes a handle **260** to facilitate manipulation. The handle **260** comprises a grip portion **266** including a slot **267** which engages a bolt **268** connected to a member **269** extending from the elongated body **242**. This provides a sliding and pivoting connection between the grip portion **266** and the member **269**. By sliding the bolt **268** in the slot **269**, the handle **260** can slide and pivot down when it is not used, thereby minimizing the space taken by the arm **224**, as illustrated by the broken lines in **FIG. 8B**.

[**0043**] As illustrated in **FIGS. 9A**, the elongated body **242** of each arm **224** includes on a bottom edge thereof a

removable elongated member **252** having a groove **254** which is designed to engage a top edge of a panel **11**. **FIG. 9B** shows an alternative elongated member **252'** which includes two grooves **254'** to support two panels with a single arm **224**.

[**0044**] In use, while the arm **224** is sufficiently high so as to be out of the way, a panel **11** is placed with its bottom edge and rear edge in the corresponding grooves **226,230,232** of the rack **210**. The locking mechanism **246** is disengaged by bringing the second ends **278** of the levers **272** toward one another using one of the described methods. The arm **224** is slid down until the groove **254** of the elongated member **252** engages the top edge of the panel **11**. The second ends **258** of the levers **272** are released and the locking mechanism **246** is automatically engaged, the spring **280** bringing the first ends **276** in contact with the vertical bar **240** to prevent the arm **224** from vertically moving. The locking mechanism **246** thus insures that the top edge of the panel **11** remains in the groove **254** of the elongated member **252**, so that the panel **11** is retained in the grooves **226,230,232** of the rack **210**.

[**0045**] Although in all embodiments only a few arms have been illustrated for clarity, it is to be understood that an arm can be provided for every set of aligned slots in the horizontal bars, so that a panel can be retained in every set of corresponding grooves.

[**0046**] In all embodiments, the elements of the rack are preferably made of metal, with the exception of the elements coming in contact with the panels, such as the elongated member of the arms and the grooves in the top surface of the base and in the rear structure which are preferably made of plastic to avoid damage to the panels. A preferred plastic is high density polyethylene (HDPE). A preferred dimension for the arms is 40 by 2**1**;**2** by ¾ inches.

[**0047**] It can be seen that in all embodiments of the present invention, the panels are retained by the arms either individually or in small groups. Thus, an individual panel, or a small group of panels, can be removed from the rack by disengaging the corresponding arm, without the need to displace or access the other panels retained on the rack. The present invention therefore allows for easy and selective access to a desired panel, or small group of panels, regardless of the number and disposition of the other panels within the rack.

[**0048**] Additionally, walls can be provided between the vertical posts **14,114,214**, such as to obtain a closed structure containing the panels. To facilitate access to the panels, the front wall should preferably be completely removable or hingedly connected to another wall. Also, reinforcing members can be provided on the rack, for example supplementary horizontal bars extending between the vertical posts, according to the weight of the panels to be transported within the rack.

[**0049**] Although the panels have been described as glass panels, the present invention can also be used to stock and transport various types of paneling, including, but not limited to, plastic, wood, and metal panels.

[**0050**] The embodiments of the invention described above are intended to be exemplary. Those skilled in the art will therefore appreciate that the forgoing description is illustrative only, and that various alternatives and modifications can be devised without departing from the spirit of the present invention. In particular, elements from different embodiments could be combined to form a different embodiment. Accordingly, the present is intended to embrace all such alternatives, modifications and variances which fall within the scope of the appended claims.

I claim:

1. A rack for storing panels, comprising

a base having a top surface;

a rear structure vertically extending from the base;

a plurality of supports in at least one of the top surface of the base and the rear structure for supporting the panels in a vertical position; and

a plurality of arms extending from the rear structure for engaging top edges of the panels to retain the panels in the vertical position.

2. The rack according to claim 1, wherein the plurality of supports support the panels in a spaced apart manner.

3. The rack according to claim 1, wherein the vertical position is substantially perpendicular to the rear structure.

4. The rack according to claim 1, wherein each of the plurality of arms engages a single one of the top edges of the panels.

5. The rack according to claim 1, wherein the plurality of arms are vertically slidable to engage the top edges of the panels.

6. The rack according to claim 5, wherein the plurality of arms can be locked at various heights such as to alternatively engage panels of various dimensions.

7. The rack according to claim 1, wherein the plurality of arms are pivotable about one end thereof connected to the rear structure to engage the top edges of the panels.

8. The rack according to claim 1, wherein the rear structure includes at least two horizontal bars.

9. The rack according to claim 8, wherein each of the plurality of arms is supported between two of the horizontal bars.

10. The rack according to claim 1, wherein the plurality of supports include a plurality of parallel horizontal grooves in the top surface of the base for receiving bottom edges of the panels.

11. The rack according to claim 10, wherein the parallel horizontal grooves extend substantially perpendicularly to the rear structure.

12. The rack according to claim 1, wherein the plurality of supports include a plurality of parallel vertical grooves in the rear structure for receiving rear edges of the panels.

13. The rack according to claim 1, wherein the plurality of supports include a plurality of parallel rods, each rod having a first end connected to the top surface of the base and a second end connected to the rear structure, such that at least one of the panels can be vertically received between adjacent rods.

14. The rack according to claim 13, wherein the plurality of rods extend from the top surface of the base at an angle substantially equal to 45 degrees.

15. The rack according to claim 13, wherein the plurality of rods are made of metal and are surrounded with soft material.

16. The rack according to claim 1, wherein each of the top edges of the panels is engaged in a groove extending along a bottom surface of one of the plurality of arms.

17. The rack according to claim 1, wherein each of the plurality of arms includes a locking mechanism so that the

plurality of arms can be locked when engaging the top edges of the panels to prevent the arms from disengaging the top edges.

18. The rack according to claim 17, wherein the locking mechanism engages automatically when the corresponding one of the plurality of arms engage at least one of the top edges of the panels.

19. The rack according to claim 17, wherein the locking mechanism is located at one end of the corresponding one of the plurality of arms and can be unlocked from an opposed end of the same.

20. The rack according to claim 1, wherein the panels are glass panels.

21. A method for storing panels within a rack having a base and a rear structure, the method comprising the steps of:

placing each panel in a vertical position on the base, at least one of a rear edge and a bottom edge of the panel being supported by supports of the rack;

engaging a top edge of each panel with a movable arm connected to the rear structure; and

locking the movable arm against the top edge of the panel to retain the panel in the vertical position.

22. The method according to claim 21, wherein the step of locking the movable arm is performed automatically when the step of engaging a top edge of each panel is performed.

23. The method according to claim 21, wherein the step of engaging the top edge of each panel with a movable arm is performed by rotating the movable arm about the rear structure.

24. The method according to claim 21, wherein the step of engaging the top edge of each panel with a movable arm is performed by vertically sliding the movable arm.

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