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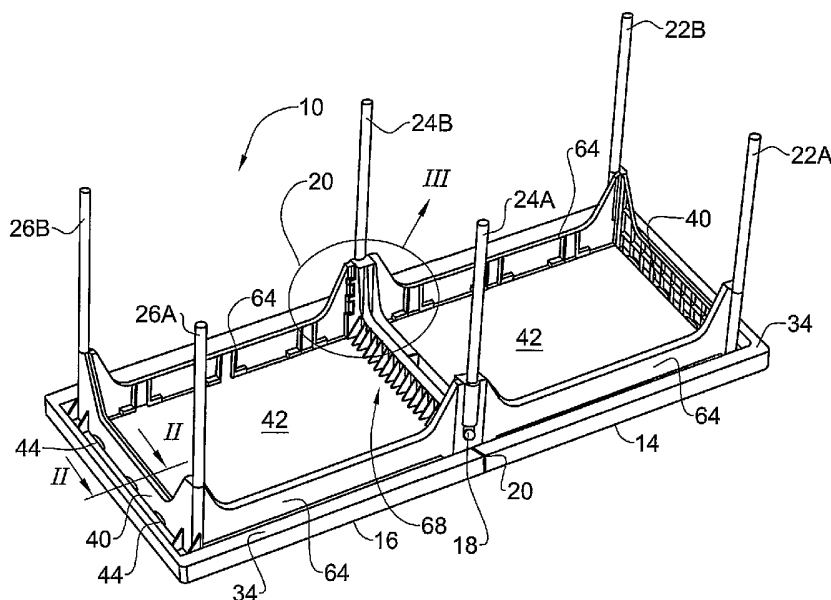
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(54) Title: COLLAPSIBLE TABLE



(57) Abstract: A collapsible table comprising a table top formed of a pair of pivotable table top half-sections (14, 16) hinged to one another at their adjacent edges along a center-line of the table and displaceable between an open position where the half-sections are coplanar, and a folded position where the half-sections overlap one another. Each half-section (14, 16) has, at an undersurface thereof, a transverse support member (40) pivotally articulated thereto with a leg associated with each lateral edge of the transverse support member, and a pair of longitudinal support members (64) pivotally articulated to the undersurface. The support members (40, 64) are displaceable between erect and collapsed positions whereby the transverse support member (40) is prohibited from collapsing as long as at least one longitudinal support member (64) is erect.

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COLLAPSIBLE TABLE

FIELD OF THE INVENTION

This invention relates generally to a collapsible table having a table top formed by a pair of hinged half-sections, and more particularly the invention is concerned with such a reinforced collapsible table where at the collapsed position
5 the sections are folded together, receiving between them the legs.

In connection with the present invention the terms *collapsible* and *foldable* are used interchangeably.

BACKGROUND OF THE INVENTION AND PRIOR ART

A dining table intended for use only on special occasions, such as for
10 banquets or picnics, must be stored when not in use. Since a dining table occupies a relatively large space, the need to store the table presents a problem, particularly when there are many tables to be stored and the storage facilities are limited. A preferred form of banquet table is therefore one that is collapsible to form a compact structure that occupies relatively little storage space (and optionally could
15 be carried in a car) and that can be easily carried from one place to another.

One type of banquet tables comprises a non-collapsible, rigid and uniform table top, with only the legs being displaceable between an operative state for supporting the table top, and a storage state where the legs are folded against the table top, typically against its bottom surface. Such a table is disclosed, for
20 example, in US Patent 6,112,674.

A typical collapsible table includes a pair of interhinged half-sections to each of which is hingedly attached a leg assembly. To collapse this table its leg assemblies are first folded in against the half-sections of the tabletop, and the half-sections are then folded together to reduce the table to a compact structure requiring
25 little storage space. To erect the table at its site of use, the half-sections are unfolded

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to form the tabletop and the leg assemblies are folded out to support this tabletop. A collapsible table in this format is disclosed in the US Patent 5,357,872 to Wilmore.

A banquet table may be subjected to heavy loads in the course of its use and accordingly, one of the aspects of the present invention resides in a collapsible
5 banquet table having reinforced half-sections made of plastic material. US Patent No. 6,058,853 discloses a collapsible banquet table having blow molded plastic half-sections reinforced by rigidified sheets.

However, blow molding is a relatively difficult and costly procedure, and the need to include rigidified reinforcing sheets adds to the cost of producing the half-
10 sections of the table. Consequently the expenses incurred in manufacturing such a collapsible table are substantial and may militate against their sale and use.

It is an object of the present invention to provide a light weight and inexpensive collapsible table having a reinforced structure rendering the table capable of supporting heavy loads which seek to deform the table and whereby
15 bending forces which seek to bend the table along either the longitudinal or transverse axis are resisted.

SUMMARY OF THE INVENTION

According to the present invention there is provided a collapsible table comprising a table top formed of a pair of pivotable table top half-sections
20 hinged to one another at their at their adjacent edges along a center-line of the table and displaceable between an open position where said half-sections are coplanar and a folded position where said half-sections overlap one another; the table characterized in that each section has at an undersurface thereof a transverse support member pivotally articulated thereto with a leg associated with each
25 lateral edge of the transverse support member, and a pair of longitudinal support members pivotally articulated to the undersurface; said support members are displaceable between erect and collapsed positions whereby the transverse support member is prohibited from collapsing as long as at least one of the

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longitudinal support member is erect. According to a particular embodiment, each lateral end of the transverse support member receives a leg of the table.

To improve stability and load-bearing resistance, there may further be provided a central support member pivotally articulated, along the center-line, at undersurfaces of the top half-sections. Said central support member may
5 comprise one or more table legs.

In order to obtain a firm table structure at its open position, an edge of each longitudinal support member is engageable with a corresponding lateral edge of the transverse support member at the erect position thereof and
10 optionally, adjoining ends of the longitudinal support members and lateral edges of the central support member are engageable at the erect position thereof. According to an embodiment of the invention, the longitudinal support member extends between the central support member and the transverse support member.

Typically, each section is formed at its adjacent edge with a transverse
15 abutment surface, whereby at an open state of the table said abutment surfaces bear against one another.

According to various embodiments and modifications of the present invention, the folding table may have one or more of several features, for example:

- 20 • The central support member is pivotally articulated, along the center-line, at undersurfaces of the top half-sections. Optionally, both top half-sections are pivotable about a hinge common also for the central support member.
- At the erect position, the support members have substantial portions extending flush with the undersurface of the respective top half-sections.
- 25 • The support members snappingly displace between their collapsed and erect positions.
- All or part of the support members are snappingly engaged with one another at their erect position.
- The support members are pivotally articulated to the undersurfaces by
30 snap-type hinges. For example, the support members are articulated to the

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half-sections by first hinge segments integrally formed at the undersurfaces and corresponding second hinge segments integrally formed at the support members.

- The half-sections are integrally formed with a peripheral downwardly extending skirt portion.
- At least some of the support members are retainable at the erected position by a snap-type support arrangement.
- A carrying handle or a carrying portion is fitted to either one or both of the top half-sections. According to one particular embodiment, the handle is retractable from between the half-sections at the folded position thereof.

Optionally, a locking arrangement is provided for securing the table at its closed/folded position namely, retaining the half-sections at their folded position, e.g. by a locking latch, by projections formed at one half-section snapingly engageable with corresponding receptacles formed at the opposite half-section, etc.

BRIEF DESCRIPTION OF THE DRAWINGS

In order to understand the invention and to see how it may be carried out in practice, an embodiment will now be described, by way of a non-limiting example only, with reference to the accompanying drawings, in which:

Fig. 1 is top perspective view of a table according to the present invention, at its open position;

Fig. 2 is a perspective view of the table, at its closed/collapsed position;

Fig. 3A is a bottom perspective view of the table, at its open position;

Fig. 3B is a section along line II-II in Fig. 3A;

Fig. 3C is an enlargement of the portion marked III in Fig. 3A;

Figs. 4A to 4E illustrate consecutive steps of collapsing a table according to the present invention, wherein:

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Fig. 4A is a bottom perspective view of the table, at a first step of collapsing the table, with a longitudinal support member thereof at an intermediate position;

Fig. 4B is an enlargement of the portion marked IV in Fig. 4A;

5 **Fig. 4C** illustrates the table with all its longitudinal support members at the folded position;

Fig. 4D illustrates the table with its transverse support members and their associated legs collapsed;

Fig. 4E illustrates the table at the final collapsing step, with its top surface
10 partially folded; and

Fig. 5 is a bottom perspective view of the table illustrating a mechanism for securing the table in the open position, including an enlargement of the mechanism.

DETAILED DESCRIPTION OF THE INVENTION

15 Reference is first made to Fig. 1 illustrating a collapsible table in accordance with the present invention generally designated **10** comprising two pivotable table top half sections **14** and **16** hingedly connected to one another and foldable about a pivot axle **18** (Figs. 3A and 4A), extending transversally at a center line **20** of the table **10**. In the open position of Fig. 1 the half sections **14**
20 and **16** are coplanar.

The table **10** is supported by six legs arranged in pairs and designated **22A** and **22B**; **24A** and **24B**; **26A** and **26B**, and will be discussed in more detail hereinafter.

The table **10** is foldable/collapsible between an open position as illustrated
25 in Fig. 1 where the table top is supported by the legs, and a closed/folded/collapsed position as illustrated in Fig. 2. Also seen in Fig. 2 is a latch **30** to retain the half sections **14** and **16** in the closed, overlapping position.

In Fig. 3A the table **10** is illustrated from its bottom side and as can be seen at each of the half sections **14** and **16**, in the present case made of plastic

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material, is formed with a peripheral skirt portion **34**, increasing the rigidity and load bearing ability of the table **10** and further, providing space for accommodating the legs and support members, in the closed position, as will become apparent hereinafter.

5 It is further noticed in Fig. 3A that the ends of legs **22A** and **B** and **26A** and **B** are attached to a transverse support member **40** pivotably articulated to an undersurface **42** of the half sections **14** and **16** by means of hinge portions **44**.

The arrangement is such that the undersurface **42** of the half sections **14** and **16** comprises several hinge segments **50** (see Fig. 3B) integrally formed
10 therewith and adapted for snap-type engagement with a receptacle hinge cavity **54** integrally formed with the transverse support member **40**. The hinge segments **50** are sized and shaped such that the transverse support members **40** are snappingly displaceable in a toggle type manner between an erect position (Figs. 3A and 3B) and a collapsed position (Fig. 4D) and further such that in the erect
15 position a surface **58** of the support member **40** flushingly bears against a corresponding surface **60** at the undersurface **42**.

Further noticed in Fig. 3A there are provided four longitudinal support members **64**, each extending along a corresponding edge of the respective half section. The longitudinal support members **64** are pivotably articulated to the
20 undersurfaces **42** of the half sections **14** and **16** in the same manner as disclosed hereinabove in connection with the transverse support members **40**, with particular reference to Fig. 3B.

A central support member **68** is mounted on the common pivot axle **18** pivotably attaching the half sections **14** and **16** whereby at the open position of
25 the table **10**, when the two half sections are coplanar, the central support member bears against corresponding portions of the undersurface **42** of the half sections, to thereby provide increased load bearing and stability to the table. Legs **24A** and **24B** extend from the central support member **68**. In accordance with other particular embodiments (not illustrated) the central support member **68** may be
30 omitted entirely or may be designed to have one central leg or no legs at all.

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As can best be seen in Fig. 3A, at the open position of the table **10**, all of the support members **40** and **64** stand erect and perpendicular to the undersurface **42**; the transverse support members **40** and the central support member **68** extend parallel to the pivot axle **18**; and the longitudinal support members **64** extend at right angles thereto.

In this position it is noticed that when all of the support members **40** and **64** are erect, a closed box-like support structure is formed by them and each support member engages at its respective ends corresponding ends of a mating support member by means of a snap-type engagement as will be described in more detail with reference to Figs. 3C and 4B. The construction of the box/frame like structure gives rise to a table of improved rigidity and load bearing ability in both the longitudinal and transverse directions.

The support members **40** and **64** are retained in their erect position in accordance with an embodiment of the present invention, both by the toggle-type hinge arrangement of the support members to the undersurfaces **42** of the half sections **14** and **16** and by the snap-type engagement between adjoining ends of respective support members. An example of such an engagement arrangement is seen in Fig. 4B, which is an enlargement of the portion marked IV in Fig. 4A, where the longitudinal support member **64** comprises four lateral projections **70A**, **70B**, **70C** and **70D** designed for snap-engagement within corresponding receptacles designated **72A**, **72B**, **72C** and **72D**, respectively, formed in a leg support portion **76** receiving leg **26B** of the transverse support member **40**.

Thus, displacement of a longitudinal support member from its erect position to its collapsed position requires some force thereby to prevent unintentional displacement thereof.

Fig. 3C is an enlargement of the portion marked III in Fig. 3A whereby an end portion of the lateral support member **64** is formed with three projections **82A**, **82B** and **82C** designed for snap-engagement within corresponding receptacles (not seen in this position) formed in leg receptacle **86** supporting leg **24B** of the central support member **68**.

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This arrangement also requires application of some reasonable force to thereby prevent unintentional collapsing of the longitudinal support members **64**.

With further reference made to Figs. 4A to 4E, it will now be explained how the table **10** is collapsed/folded from its open position as illustrated in Figs. 1 and 3A to its closed/folded position as in Fig. 2.

At a first step (Fig. 4A) the four longitudinal support members **64** are collapsed by pivotally displacing them inwardly in the direction of arrow **90**. Fig. 4C illustrates the table **10** after the four longitudinal support members **64** have been collapsed and lie flush against the undersurface **42** of the half sections **14** and **16**.

Only at this point, after the longitudinal support members **64** of each half section **14** and **16** have been collapsed, the transverse support member **40** may be collapsed by turning them inward as indicated by arrows **94** in Fig. 4C such that the transverse support members **40** lie over the already folded longitudinal support members **64**. It is noticed that in the position shown in Fig. 4D, the collapsed transverse support members **40** and their respective legs **22A,B** and **26A,B** do not occupy the entire space formed by the peripheral skirt **34**, thereby allowing sufficient space to accommodate the central support member **68** and the central legs **24A** and **24B**.

At a final step the half sections **14** and **16** are pivotally displaced toward one another (arrow **98** in Fig. 4E) until obtaining the fully closed position as in Fig. 2.

Retaining the table **10** in its closed position, may be obtained by closing latch **30** (Fig. 2) or by snap type arrangement as illustrated for example in Fig. 4E wherein the skirt portion **34** of the half section **14** comprises two projections **102** fitted for snap engagement within corresponding two receptacles **104** fitted on the skirt **34** of half section **16**.

Finally, carrying the table **10** from one place to another may be facilitated by a handle **110** formed at half section **14** by means of a depression at the skirt portion **34** enabling one to insert his hand between the half section when the table

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is in its closed position. In accordance with a variation thereof, such an opening may be formed also at the half section **16** and optionally also at the opposed sides thereof. As an alternative, there may be provided a handle **114** (Fig. 4E) displaceable between an extracted position as shown, and a retracted position
5 (not shown) merely by folding or sliding it about a suitable hinge or rack.

Fig. 5 illustrates the table **10** further comprising one example of a securing support mechanism **120** for providing additional stability and support to the table **10** in the open position. For this purpose, the mechanism **120** comprises at least one locking pin **122** (two shown), which are slidable into the central support
10 member **68**, as indicated by an arrow **124**. The central support member **68** is adapted with openings **126** for receiving the pins **122**. When the mechanism **120** is slid into the central support member **68**, the table **10** cannot be collapsed/closed and it further adds mechanical rigidity to the table.

The pins **122** and/or openings **126** may comprise an arrangement for
15 fixing the pins **122** in the openings **126**, for example, corresponding slots, a snapping arrangement, or the like. The securing mechanism **120** also typically includes a body member **128** which provides for convenient handling of the mechanism and, in the case of multiple pins **122**, holds the pins in a suitably parallel position.

20 While there has been shown an embodiment with several modifications of the invention, it will be appreciated by a person of the art that many changes may be made therein without departing from the spirit and the scope of the invention, *mutatis mutandis*.

CLAIMS:

1. A collapsible table comprising a table top formed of a pair of pivotable table top half-sections hinged to one another at their adjacent edges along a center-line of the table and displaceable between an open position where said
5 half-sections are coplanar and a folded position where said half-sections overlap one another; the table characterized in that each section has at an undersurface thereof a transverse support member pivotally articulated thereto with a leg associated with each lateral edge of the transverse support member, and a pair of longitudinal support members pivotally articulated to the undersurface; said
10 support members being displaceable between erect and collapsed positions whereby the transverse support member is prohibited from collapsing as long as at least one of the longitudinal support members is erect.
2. A collapsible table according to claim 1, wherein a central support member is pivotally articulated, along the center-line, at undersurfaces of the top
15 half-sections.
3. A collapsible table according to claim 1, wherein the transverse support member extends adjacent an end of the half-section.
4. A collapsible table according to claim 1, wherein the transverse support member extends parallel to the center-line of the table.
- 20 5. A collapsible table according to claim 1, wherein each lateral end of the transverse support member receives a leg of the table.
6. A collapsible table according to claim 2, wherein the central support member receives at least one leg of the table.
7. A collapsible table according to claim 6, wherein each lateral end of the
25 central support member receives a leg of the table.
8. A collapsible table according to claim 2, wherein adjoining ends of the longitudinal support members and lateral edges of the central support member are engageable at the erect position thereof.

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9. A collapsible table according to claim 2, wherein an edge of each longitudinal support member is engageable with a corresponding lateral edge of the central support member at the erect position thereof.
10. A collapsible table according to claim 1, wherein an edge of each longitudinal support member is engageable with a corresponding lateral edge of the transverse support member at the erect position thereof.
11. A collapsible table according to claim 1, wherein each section is formed at its adjacent edge with a transverse abutment surface, whereby at an open state of the table said abutment surfaces bear against one another.
12. A collapsible table according to claim 1, wherein the longitudinal support members extend essentially the length of the half-section.
13. A collapsible table according to claim 1, wherein the longitudinal support members is composed of several members linked together.
14. A collapsible table according to claim 1, wherein the center support member is hingedly coupled to a transverse hinge extending at the center-line of the table.
15. A collapsible table according to claim 1, wherein the support members are snappingly engaged with one another at their erect position.
16. A collapsible table according to claim 1, wherein the support members are pivotally articulated to the undersurfaces by snap-type hinges.
17. A collapsible table according to claim 16, wherein the support members are articulated to the half-sections by first hinge segments integrally formed at the undersurfaces and corresponding second hinge segments integrally formed at the support members.
18. A collapsible table according to claim 1, wherein both top half-sections are pivotable about a hinge common also for the central support member.
19. A collapsible table according to claim 1, wherein both top half-sections are pivotable about a hinge common also for the central support member.
20. A collapsible table according to claim 1, wherein the table top has a circular shape.

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21. A collapsible table According to claim 1, wherein the half-sections are integrally formed with a peripheral downwardly extending skirt portion.
22. A collapsible table according to claim 1, wherein at least some of the support members are retainable at the erected position by a snap-type support
5 arrangement.
23. A collapsible table according to claim 1, wherein at the erect position the support members have substantial portions extending flush with the undersurface of the respective top half-sections.
24. A collapsible table according to claim 1, wherein the half-sections and
10 the support members are made of plastic material.
25. A collapsible table according to claim 1, wherein a carrying handle is fitted to either one or both of the top half-sections.
26. A collapsible table according to claim 25, wherein the handle is retractable from between the half-sections at the folded position thereof.
- 15 27. A collapsible table according to claim 25 wherein the handle is a recess integrally formed at one or both of the top half-sections.
28. A collapsible table according to claim 2, wherein the longitudinal support member extends between the central support member and the transverse support member.
- 20 29. A collapsible table according to claim 1, wherein a lock arrangement is provided for securing the half-sections at the folded position.
30. A collapsible table according to claim 1, wherein at the erect position the support members are engaged with one another to form a closed support frame.
31. A collapsible table according to claim 1, further comprising a securing
25 support mechanism for providing additional stability and support to the table in the open position.
32. A collapsible table according to claim 31, wherein the securing support mechanism comprises at least one locking pin slidable into the central support member.

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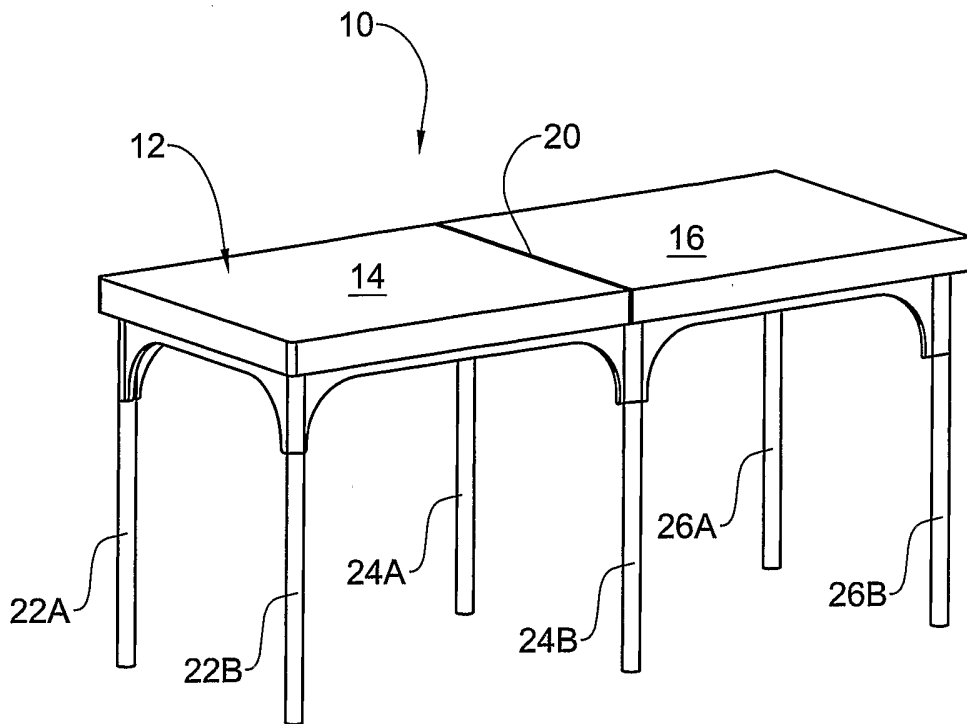
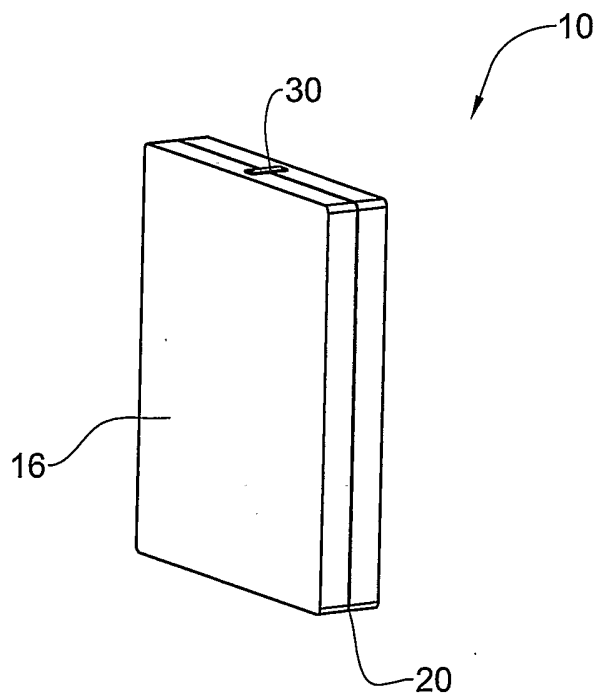


FIG. 1

FIG. 2



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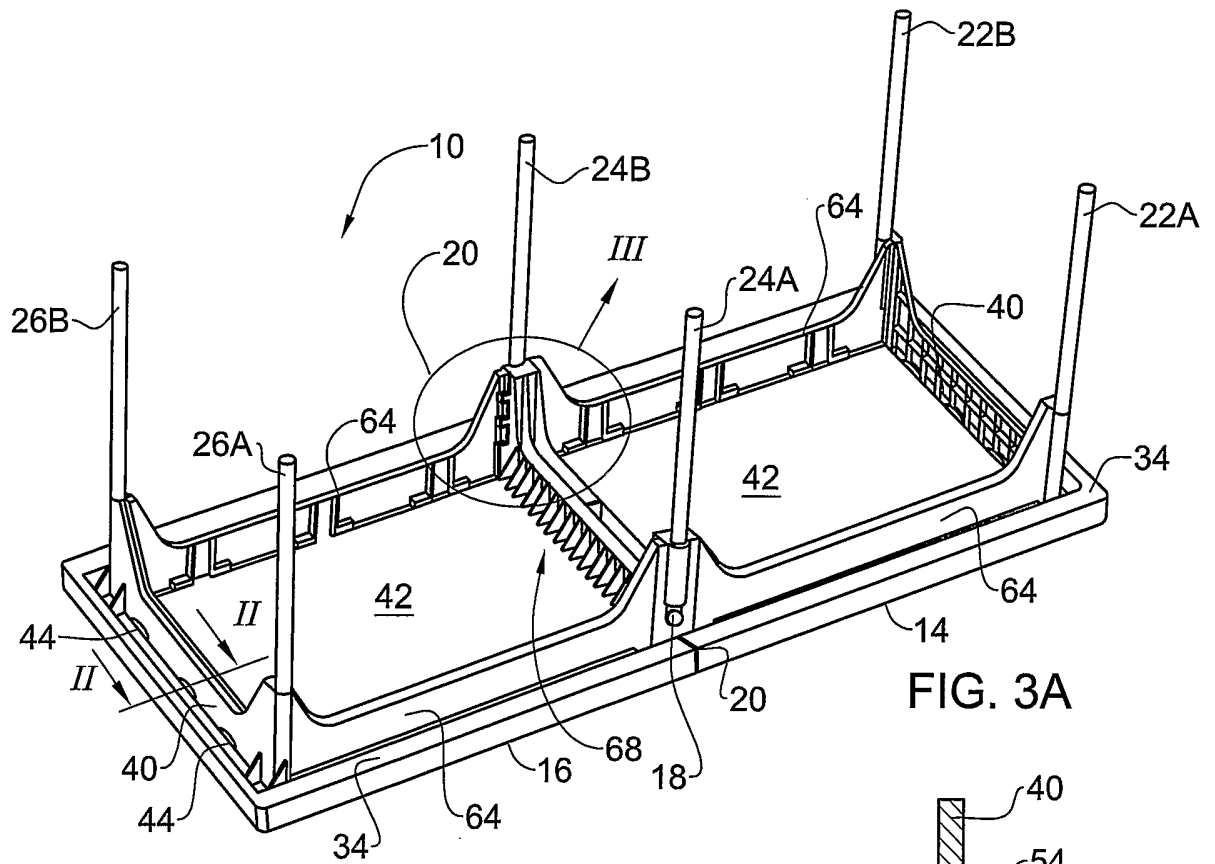


FIG. 3A

FIG. 3B

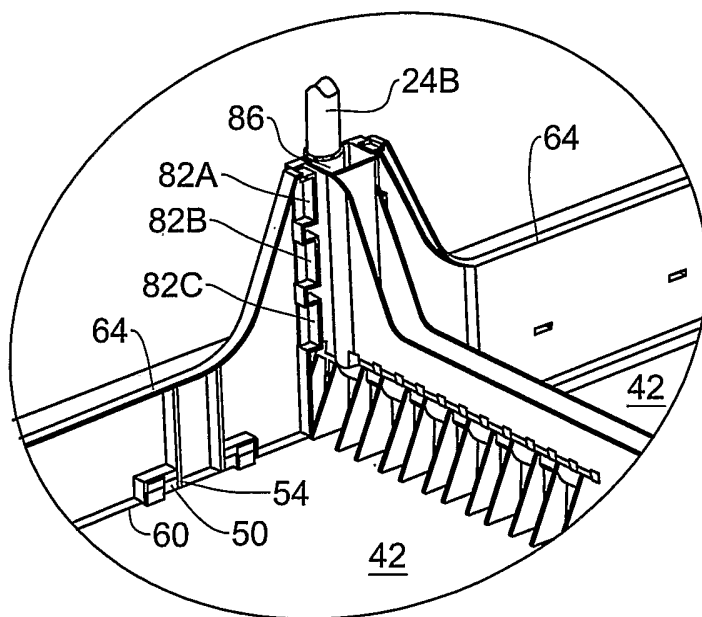
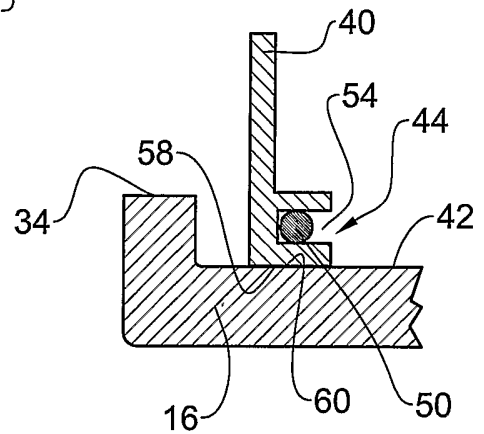


FIG. 3C

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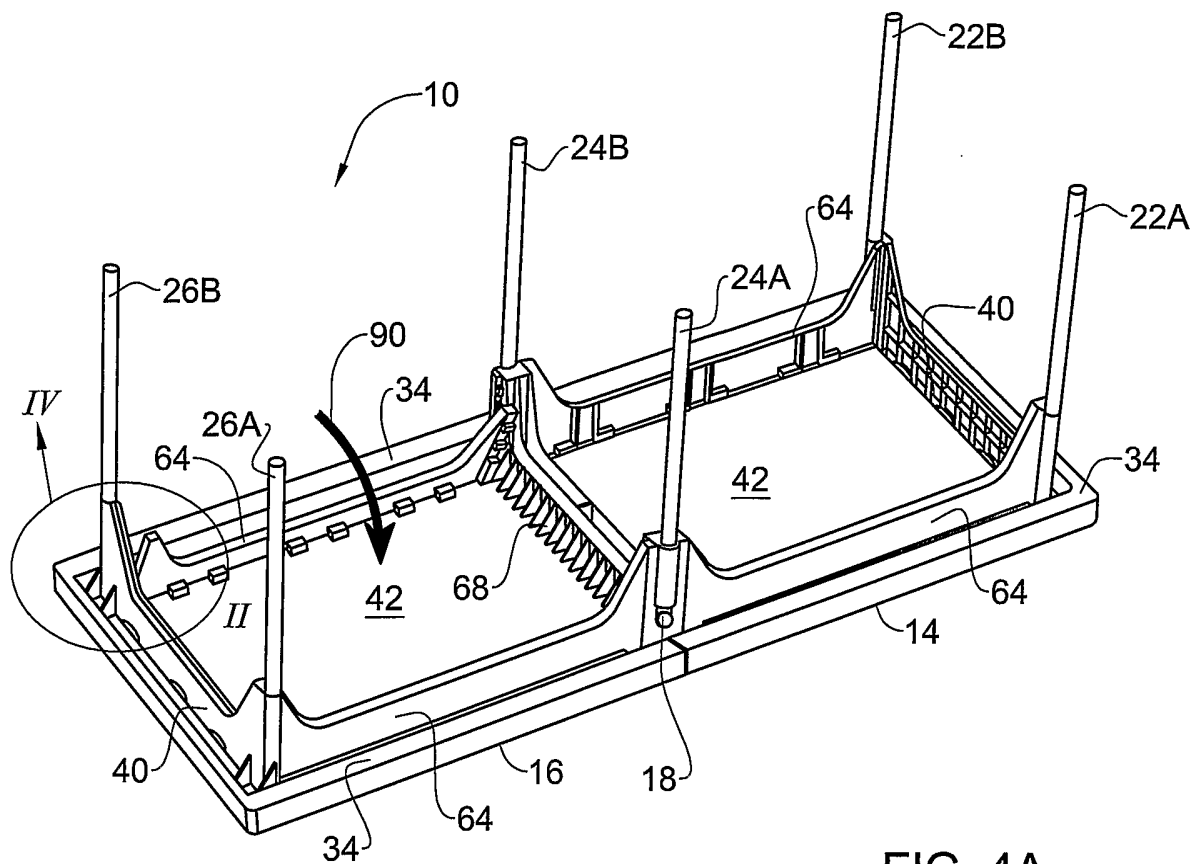


FIG. 4A

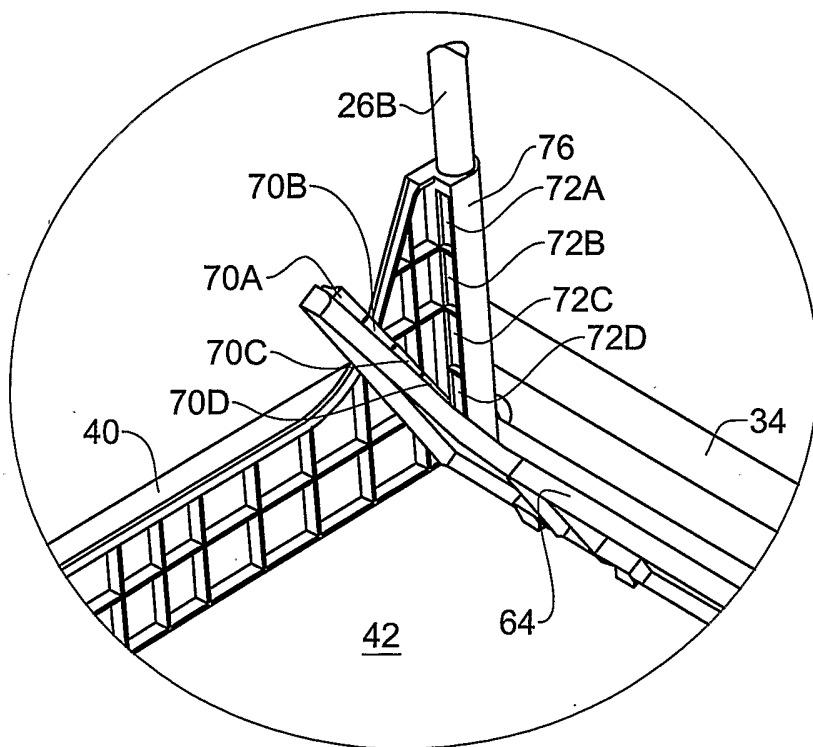


FIG. 4B

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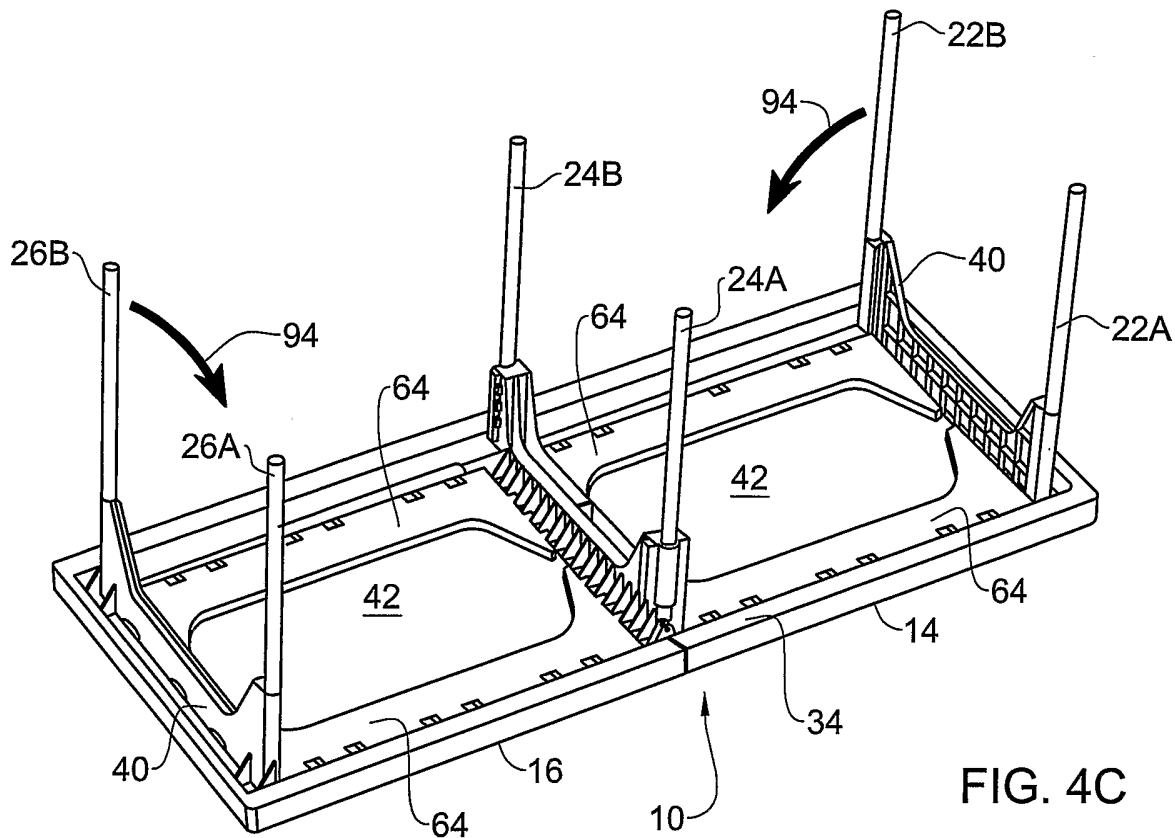


FIG. 4C

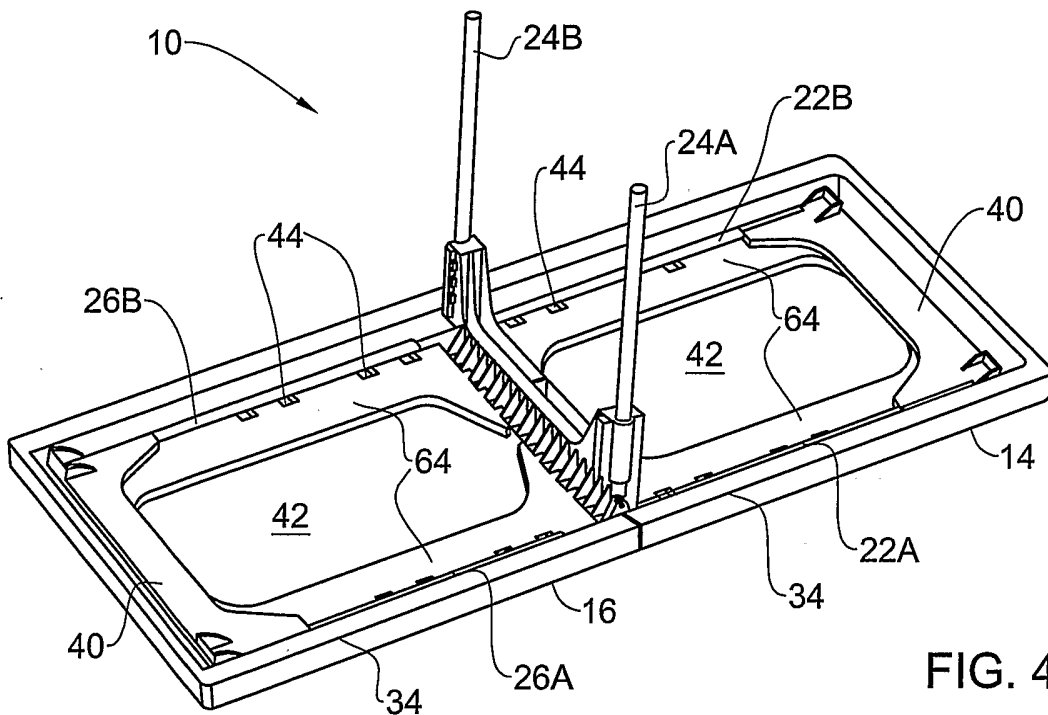


FIG. 4D

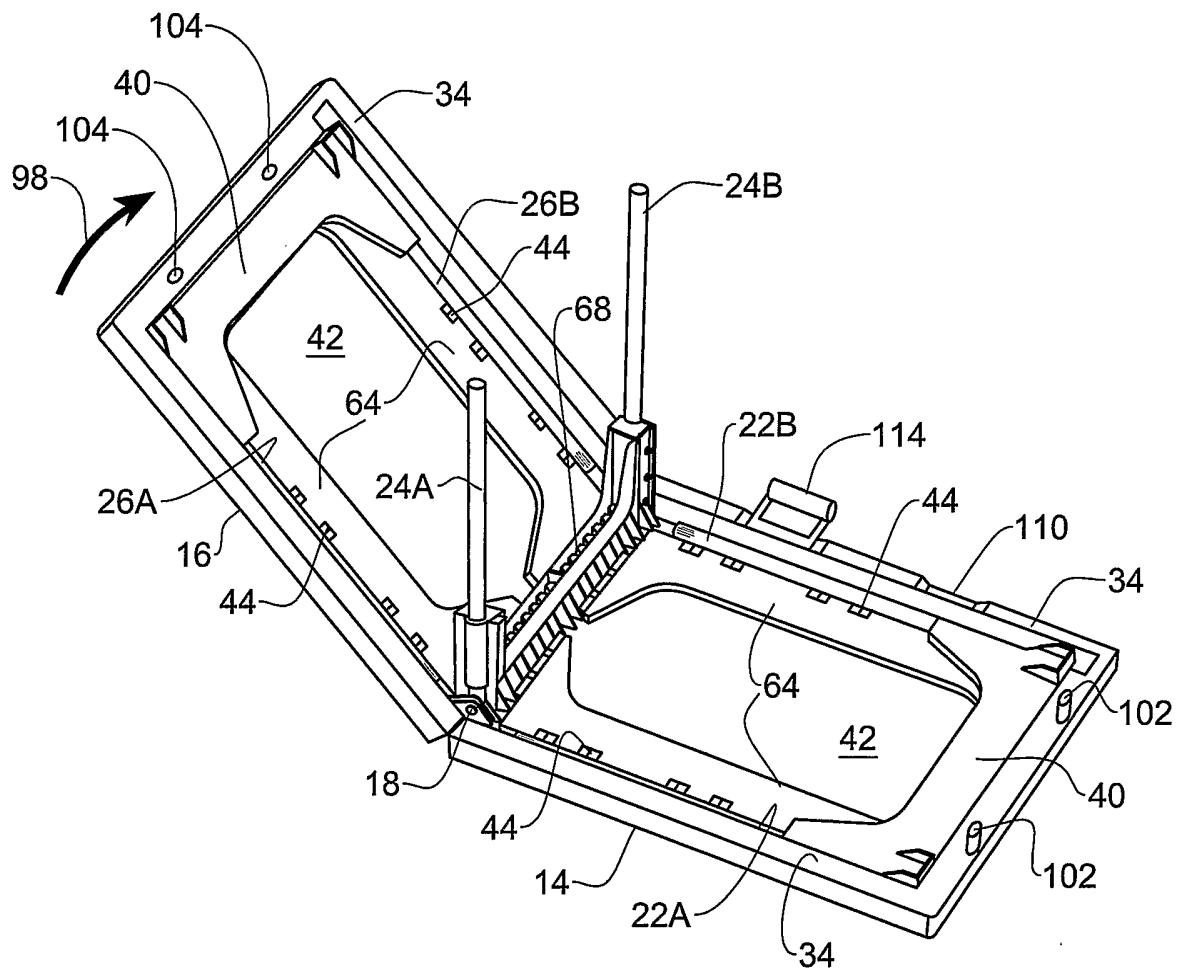


FIG. 4E

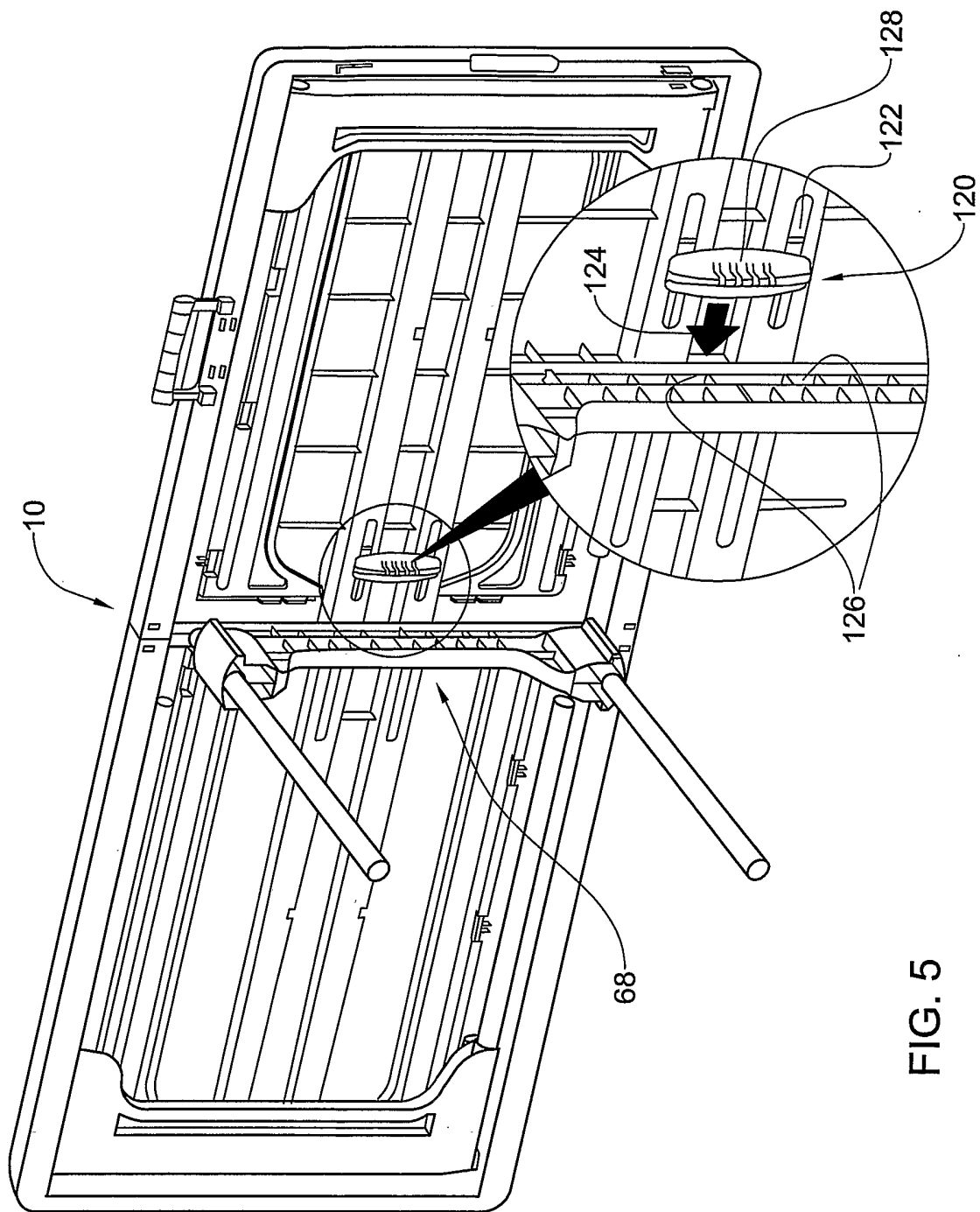


FIG. 5

INTERNATIONAL SEARCH REPORT

International Application No

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A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A47B3/083

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	FR 738 868 A (ERNEST BARTHELEMY) 30 December 1932 (1932-12-30)	1, 3-5, 10-13, 15-17, 20-27, 29-31
A	page 1 - page 2; figures 1-4	2, 6-9, 14, 18, 19, 28, 32
X	GB 2 298 782 A (GARY * BUCKETT) 18 September 1996 (1996-09-18)	1
A	page 2; figures 1-5	2-32
A	FR 501 293 A (CHARLES PERROT) 8 April 1920 (1920-04-08)	1-32
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Patent family members are listed in annex.

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