

(21) Application No: 0702782.4
(22) Date of Filing: 13.02.2007

(71) Applicant(s):
Faversham Furniture Limited
(Incorporated in the United Kingdom)
Graveney Road, FAVERSHAM, Kent,
ME13 8UN, United Kingdom

(72) Inventor(s):
Ferenc Juhasz

(74) Agent and/or Address for Service:
Withers & Rogers LLP
Goldings House, 2 Hays Lane, LONDON,
SE1 2HW, United Kingdom

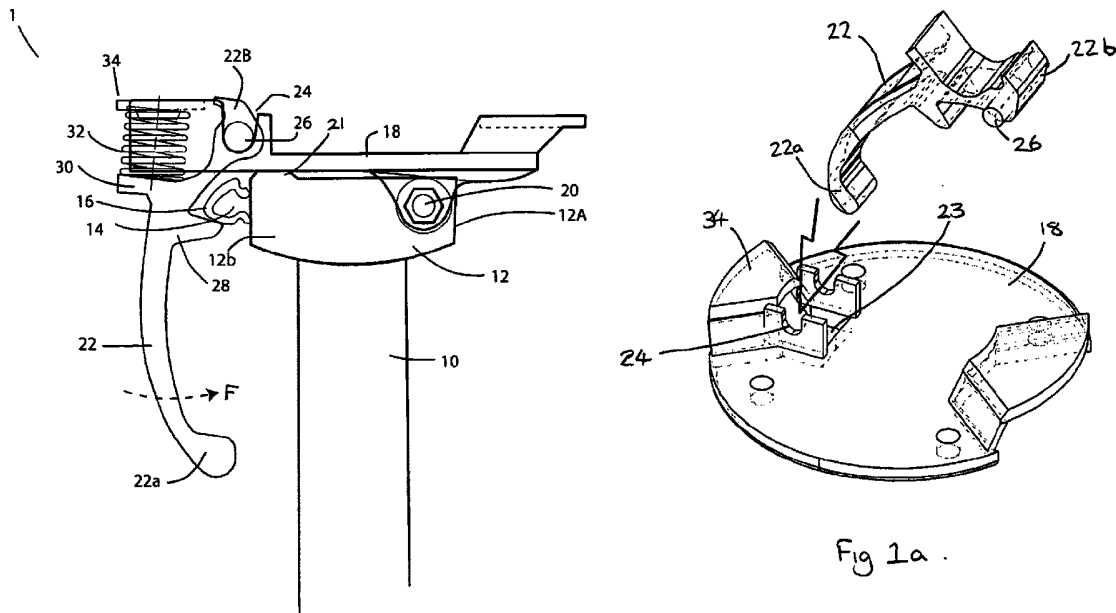
(51) INT CL:
A47B 3/08 (2006.01) **A47B 13/00** (2006.01)

(56) Documents Cited:
AT 000404542 B **US 5174225 A**
US 5121697 A **US 4986195 A**

(58) Field of Search:
UK CL (Edition X) **A4L, E2F**
INT CL **A47B**
Other: **EPODOC, WPI**

(54) Abstract Title: **Flip-Top Table Mechanism**

(57) A flip-top table mechanism 1 has an upper member 18 attachable to a lower surface of a table top 38. A base member 12 is attached to an upper end of a table top support 10, the base member being pivotally connected to the upper member 18. A catch 14 extends from a surface of the base member 12. A handle 22 is pivotally connected to the upper member 18, the handle being engageable with the catch 14 to lock the mechanism 1 in at least one operating position. Means, which may be resilient, 32 are provided for urging the handle 21 towards the catch 14. A protective cover may partly cover said catch means.



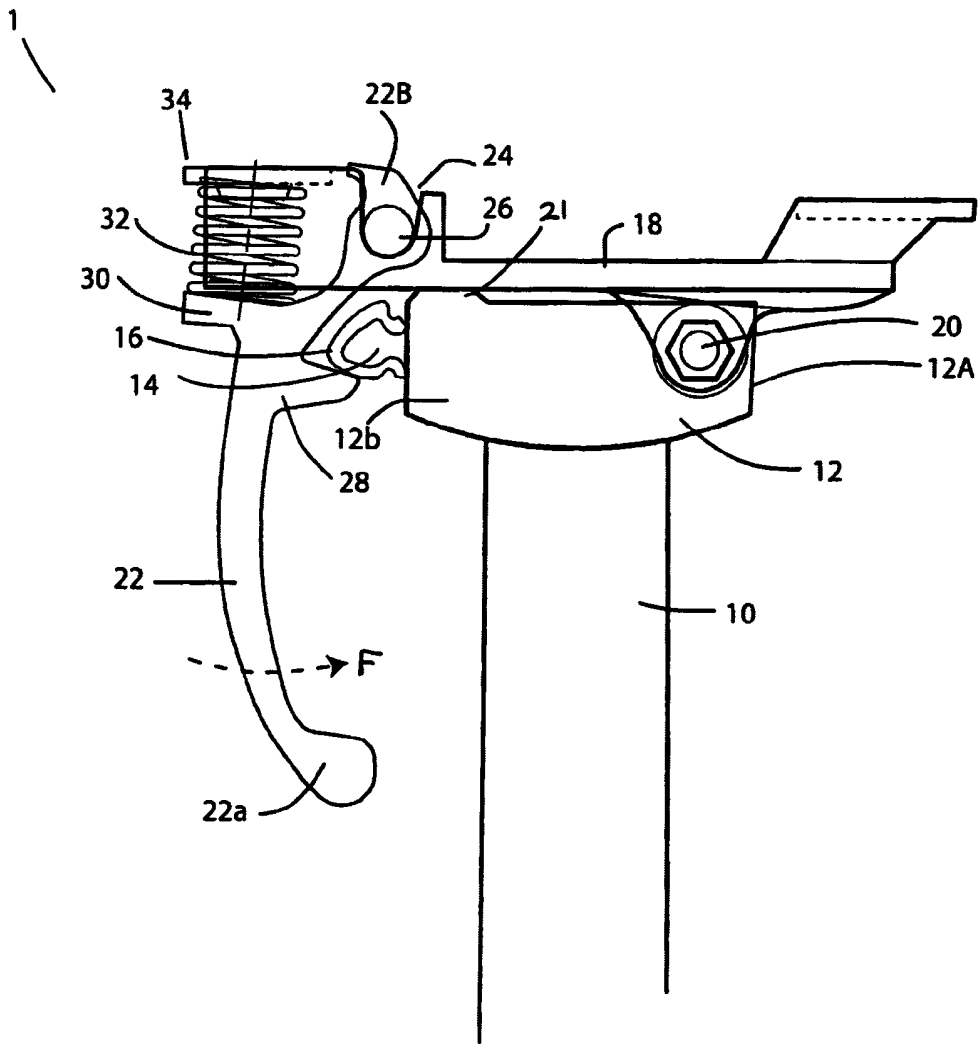


FIG 1

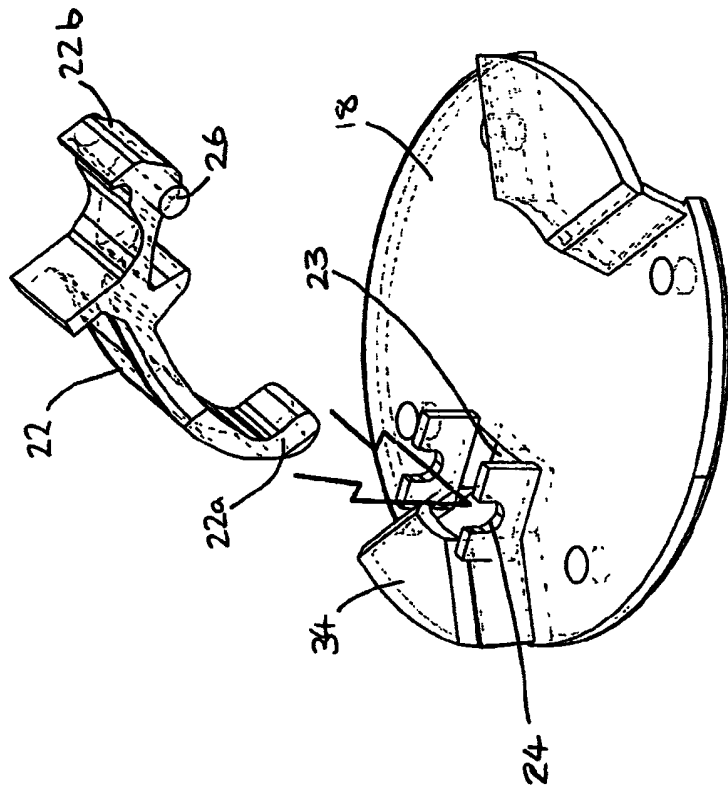


Fig 1a.

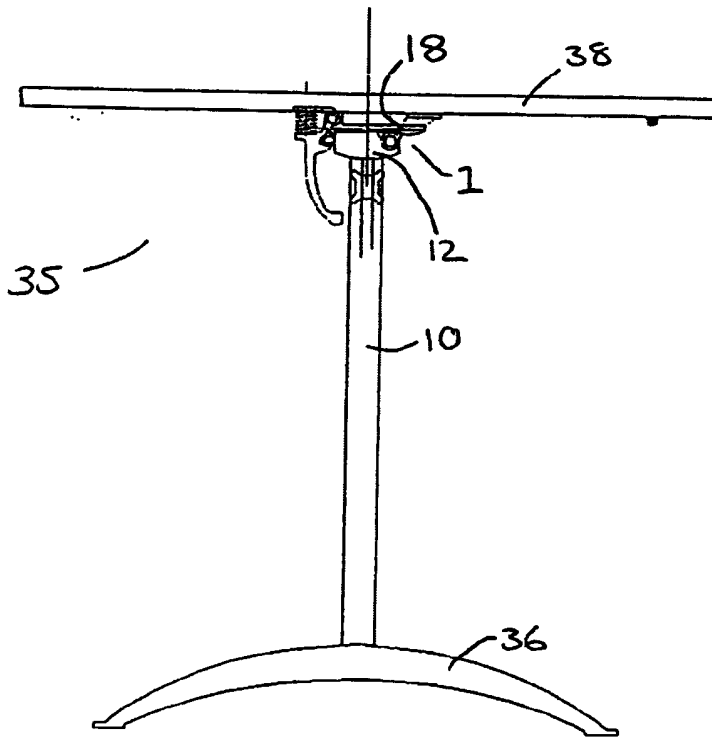


Fig 2

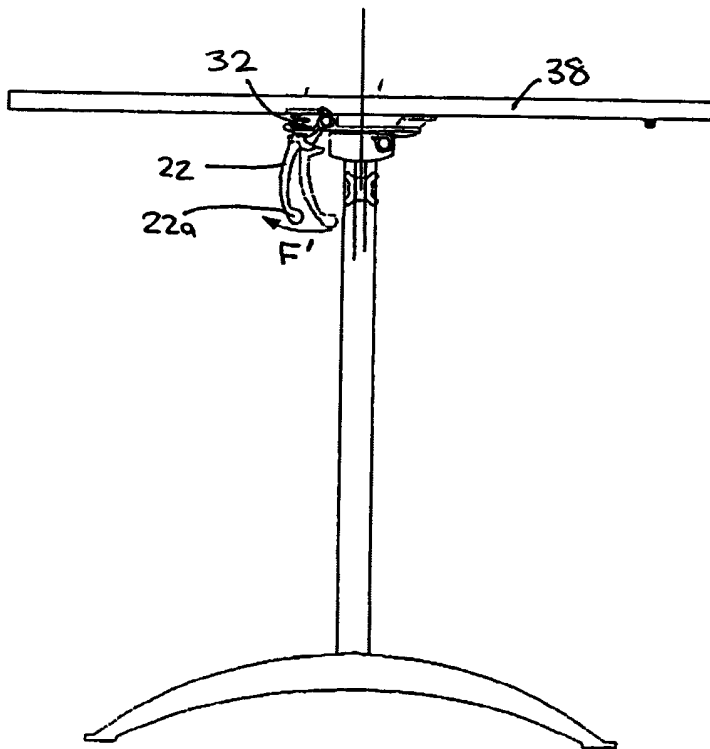


Fig 3

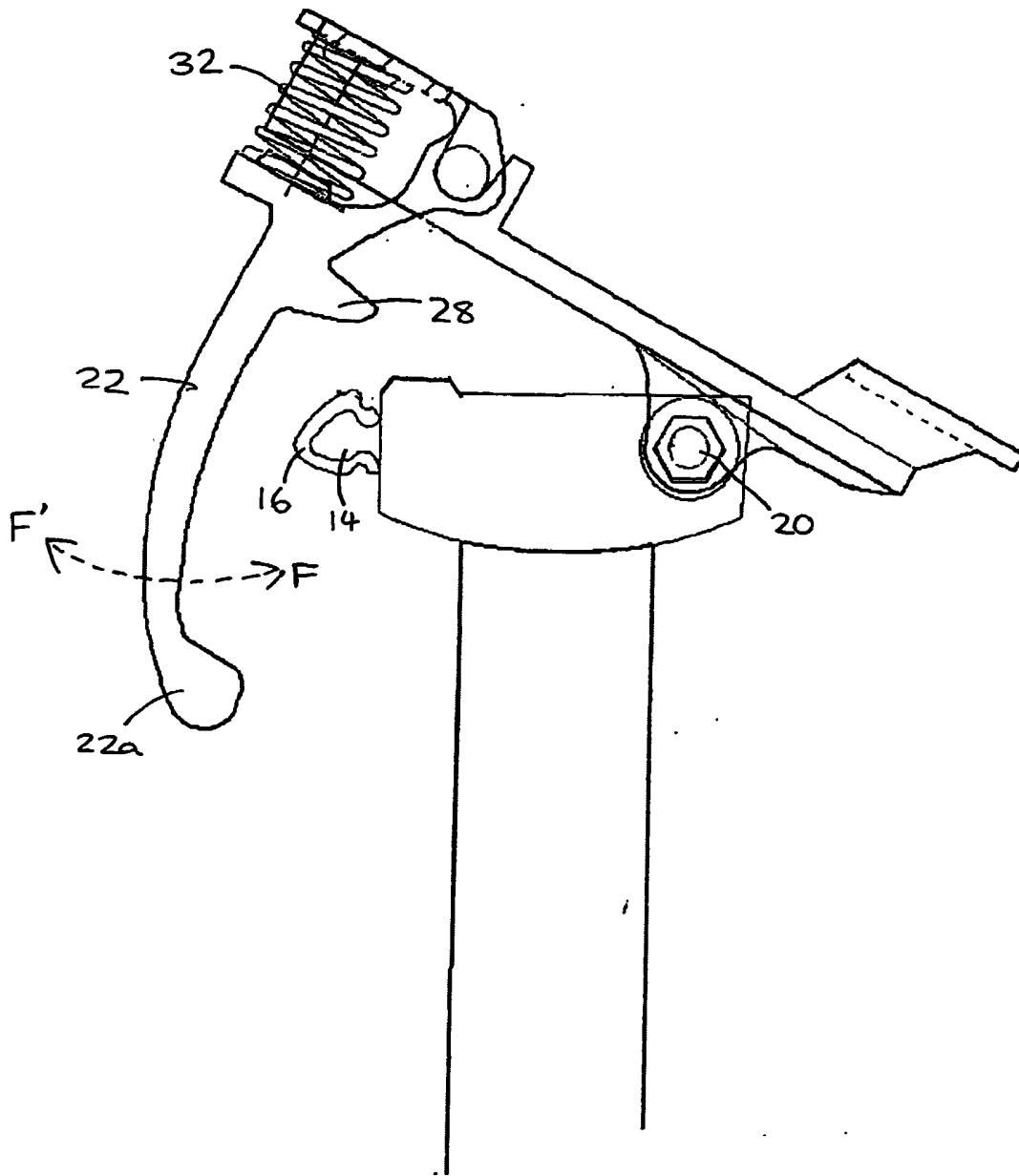


FIG 4

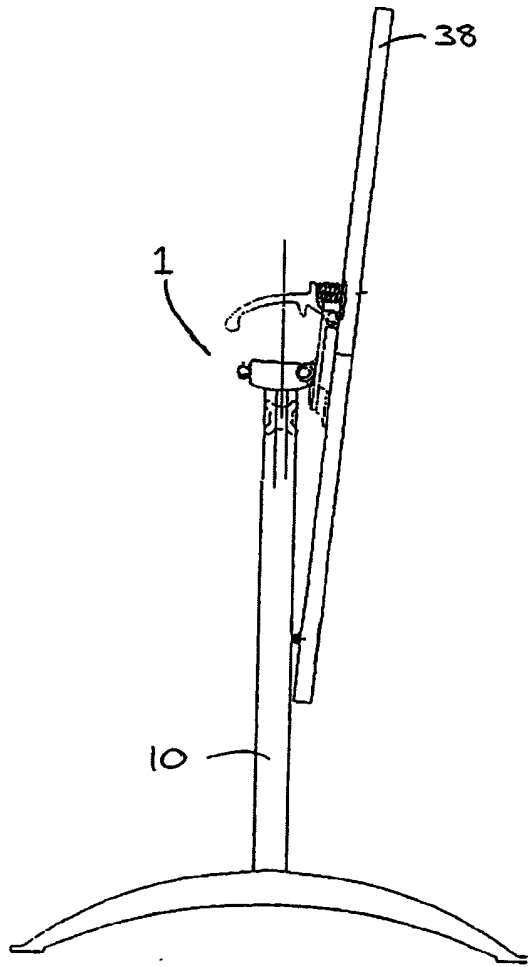


Fig 5.



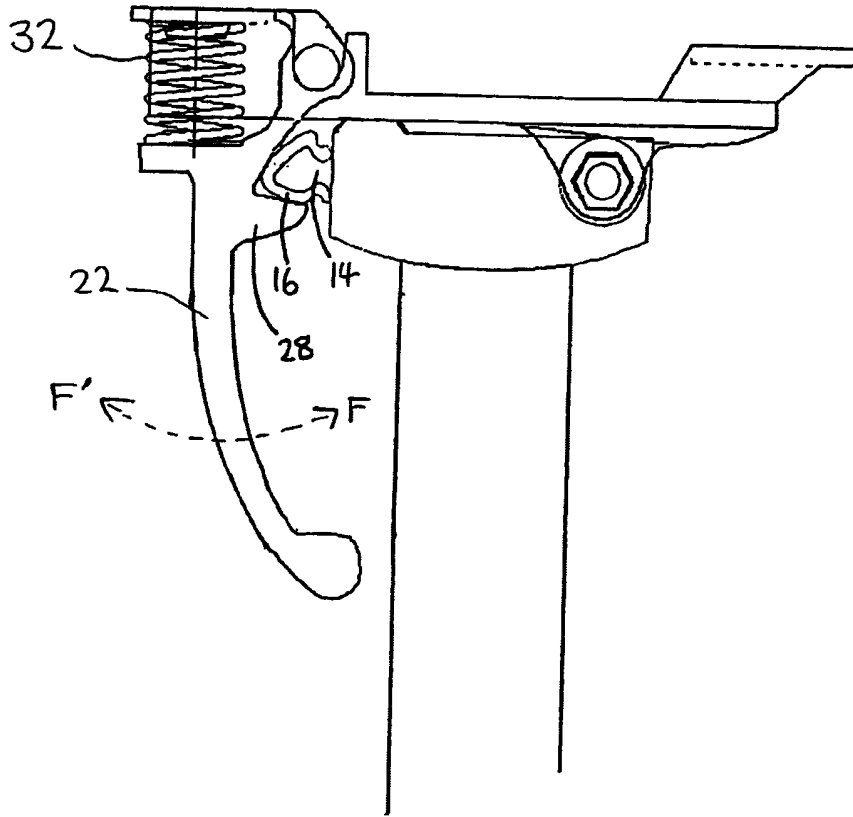
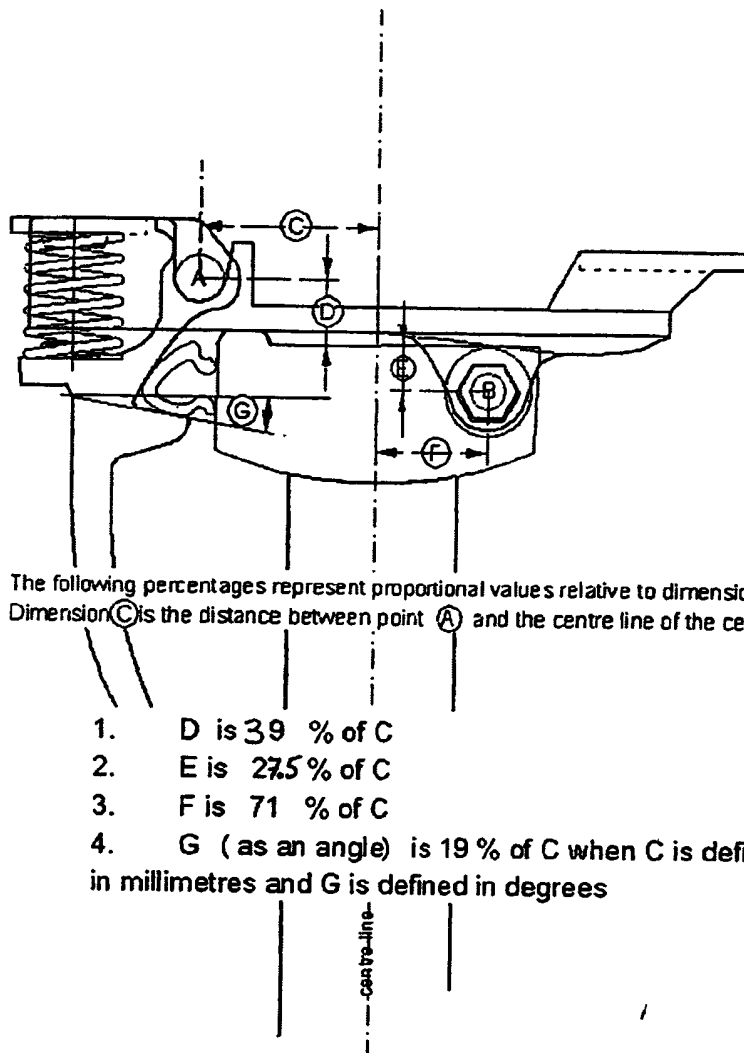


FIG 6





The following percentages represent proportional values relative to dimension C.
Dimension C is the distance between point A and the centre line of the central pedestal leg.

1. D is 39 % of C
2. E is 27.5 % of C
3. F is 71 % of C
4. G (as an angle) is 19 % of C when C is defined in millimetres and G is defined in degrees

FIG 7

Flip-Top Table Mechanism

This invention relates to a flip-top table mechanism, for use with flip-top furniture, especially flip-top tables.

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A flip-top table is a table having a table top and a table top support, pivotally attached in such a way that the table top can exist in a horizontal position for normal use, or can be flipped up to exist in a vertical position for storage purposes. Flip-top tables are by nature fairly small, and generally have a central pedestal leg, with either a circular base, 10 or a base arrangement comprising a plurality of pronged 'feet'. Flip-top tables are well known.

Another problem with existing flip-top table mechanisms is that, over time, wear and tear to the mechanism causes it to function less effectively, and in some cases will 15 result in the table top being unable to be held in the horizontal position. Repair or replacement of a worn mechanism can be expensive, if at all possible.

A further disadvantage of existing flip-top table mechanisms, is that excessive force to particular areas of the table top can result in the mechanism failing, causing the table 20 top to suddenly flip up out of its horizontal position, resulting in items on the table being undesirably removed.

Yet a further disadvantage of existing flip-top table mechanisms, is a requirement for a safety catch to prevent inadvertent disengagement of a catch handle in the horizontal 25 mode.

Existing flip-top table mechanisms also have a requirement for a locking device, to hold the table top in a vertical storage mode.

Yet another disadvantage with existing flip-top tables is a requirement that the catch handle is manually engaged onto a receiving catch to achieve a safe horizontal top mode.

- 5 An aim of the present invention is to provide an improved flip-top table mechanism with the ability to adjust to varying manufacturing tolerances and to wear and tear in the mechanism.

The present invention provides a flip-top table mechanism comprising:

- 10 an upper member attachable to a lower surface of a table top;
a base member attachable to an upper end of a table top support, the base member being pivotally connected to the upper member;
a catch member extending from a surface of the base member;
a handle, pivotally connected to the upper member, the handle being engageable with
15 the catch member to lock the mechanism in at least one operating position, wherein means are provided for urging the handle towards the catch member.

Preferably, a protector at least partially covers the catch, wherein the protector is formed from a plastics material.

- 20 Preferably, the means for urging the handle towards the catch member is a resilient member.

- Advantageously the means by which the base member is pivotally connected to the
25 upper member is a first pivot pin, wherein the first pivot pin is a bolt, and the means by which the handle is pivotally connected to the upper member is a second pivot pin.

The flip-top table mechanism is preferably formed from cast aluminium.

- 30 In a preferred embodiment, the dimensions of the components of the flip-top table mechanism are proportionally relative to the distance from the centre of the upper end

of the table top support and the centre of the means for pivotally connecting the upper member to the handle.

The invention also provides a flip-top table having a table top and a table top support,
5 the table top and table top support pivotally connected by a flip-top table mechanism,
the mechanism comprising:

an upper member attached to the table top; a base member attached to an upper
end of the table top support, the base member being pivotally connected to the upper
member;

10 a catch member extending from a surface of the base member;

a handle, pivotally connected to the upper member, the handle being engageable
with the catch member to lock the mechanism in at least one operating position,
wherein means are provided for urging the handle towards the catch member.

15 The invention will now be described in greater detail, by way of example, with
reference to the drawings, in which:

Figure 1 is a sectional view of a flip-top table mechanism constructed in accordance
with the invention;

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Figure 1a is a perspective view of two components of the flip-top table mechanism
shown in Figure 1;

Figure 2 is a side view of a flip-top table including the flip-top table mechanism shown
25 in Figure 1, in a fully-closed configuration;

Figure 3 is a side view of the flip-top table shown in Figure 2, with the flip-top table
mechanism in mid-operation;

30 Figure 4 is a sectional view of the flip-top table mechanism shown in Figure 1, in a
partially-open configuration;

Figure 5 is a sectional view of the flip-top table shown in Figure 2, with the flip-top table mechanism in its open position;

Figure 6 is a sectional view of the flip-top table mechanism shown in Figure 1, with a component worn; and

Figure 7 is a sectional view of the flip-top table mechanism shown in Figure 1, containing proportional critical measurements of the invention.

Referring to the drawings, Figure 1 shows a flip-top table mechanism 1 mounted on a central pedestal 10 of a table (not shown). A base member 12 is attached to the pedestal 10, the base member having a pivot end 12a and a catch end 12b. A partially-curved catch 14 extends from the catch end 12b of the base member 12. A protector 16, made of a plastics material, covers the catch 14, and provides protection from wear and tear to the catch.

An upper member 18 is pivotally connected to the pivot end 12a of the base member 12 by means of a first pivot pin 20. With the flip-top table mechanism in a closed position, a lower surface of the upper member 18 rests upon a raised portion 21 at the catch end 12b of an upper surface of the base member 12. The upper member 18 is provided with means for attaching it to a lower surface of a table top (not shown).

As shown in Figure 1a, a handle 22 extends through an aperture 23 in the upper member 18 at the catch end 12b of the base member 12. The handle 22 has a grip end 22a and a pivot end 22b. The pivot end 22b is shaped such that it fits into a cavity 24 formed in the upper member 18. An aperture through the pivot end 22b of the handle 22 receives a second pivot pin 26. A first projection 28 extends from the handle 22, and is positioned so as to engage with the underside of the protector 16 of the catch 14. A second projection 30 extends from the handle 22, in the opposite direction to the first projection 28.

A coil spring 32 is positioned, in a state of partial compression, between the second projection 30 of the handle 22 and an upper support 34 of the upper member 18, so that the spring exerts a downwards force on the second projection 30, and a rotational force on the handle in the direction of arrow F.

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As shown in Figure 2, the flip-top table mechanism 1 is attached to a flip-top table 35 having a table base 36 and a table top 38, the base member 12 being connected to the pedestal 10 of the table base, and the upper member 18 being connected to the table top.

10 With the flip-top table mechanism in its closed position, the table top 38 is substantially horizontal, and the upper surface of the first projection 28 of the handle 22 is urged by the spring 32 towards, and engages with, the underside of the protector 16 of the catch 14, creating a frictional resistance between the upper surface of the first projection and the protector.

15 Referring to Figures 3 and 4, in order to move the table top 38 into a vertical position, the grip end 22a of the handle 22 is moved in the direction of the arrow F'. When the first projection 28 of the handle 22 has been displaced beyond the protector 16 of the catch 14, an upwards force can be applied to the table top 38, which will cause it to pivot about the first pivot pin 20, and move into a vertical position.

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Referring to Figure 5, when the flip-top table mechanism 1 is fully opened, the table top 38 is positioned beyond the vertical, with the lower end of the table top resting against the pedestal 10. The weight of the table top 38 and its position beyond the vertical, cause it to remain in its near vertical open position. An advantage of the present
25 invention, therefore, is that no device is required to lock the table top 38 in the vertical position.

When returning the table top 38 to its original horizontal position, the raised end of the table top is lowered. The lower surface of the first projection 28 of the handle 22
30 makes contact with the upper edge of the protector 16 of the catch 14. The resultant force applied to the lower edge of the first projection 28 causes the handle 22 to be displaced in the direction of arrow F'. The spring 32 is temporarily compressed. Once

the first projection 28 has been displaced beyond the edge of the protector 16, the force stored by the compressed spring 32 causes the handle 22 to move in the direction of the arrow F, until the upper surface of the first projection engages with the lower edge of the protector 16. Another advantage with the present invention, therefore, is that the catch handle 22 engages automatically with the catch 14, obviating the requirement for manual engagement.

Referring to Figure 6, the compressed spring 32 constantly applies a force to the handle 22 in the direction of the arrow F. If the protector 16 of the catch 14 is worn over time, its size may reduce, or its shape may become distorted. The first projection 28 of the handle 22 will always be urged towards, and engage with, the protector 16, despite the wear or distortion.

Figure 7 shows the flip-top table mechanism 1 marked with the reference letters A to G. Distances D, E and F, and angle G are shown as percentages with respect to distance C, whereby C is the distance between point A and the centre line of the central pedestal 10. In Figure 7 distance D is 39% of distance C, distance E is 27.5% of distance C, distance F is 71% of distance C, and angle G is 19% of distance C where C is defined in millimetres and G is defined in degrees. A significant variation in any of these ratios would result in the mechanism failing to close properly.

The flip-top table mechanism described herein is moulded in cast aluminium.

One advantage of the present invention is that with the table top 38 in its horizontal position, the geometries are such that the flip-top table mechanism 1 will remain closed. Even if force is applied to any edge of the table top 38, for example if someone sits on the table top, the mechanism 1 will not inadvertently release. Furthermore, no further safety catch is required to secure the mechanism and prevent unintended disengagement of the mechanism.

Another advantage of the present invention is that again, by virtue of its geometry, the mechanism 1 has the ability to adjust to varying manufacturing tolerances and to the possibility of wear in the mechanism generally.

- 5 Yet another advantage of the present invention is that the geometry is as such that the handle 22 will remain easy to use and it will not jam or stick on the catch 14.

It will be appreciated that various alternatives to the flip-top table described hereinbefore can be made including:

- 10 the second pivot pin 26 may be cast into, or formed as part of, the handle 22;
the coil spring 32 may be substituted by a torsion bar or silicone rubber spring;
the flip-top table mechanism 1 could be formed from fabricated sheet steel or fabricated sheet aluminium, and tubular material combined with cast components;
the upper member 18 could be integral with the table top 38.

Claims

1. A flip-top table mechanism comprising:
 - an upper member attachable to a lower surface of a table top;
 - 5 a base member attachable to an upper end of a table top support, the base member being pivotally connected to the upper member;
 - a catch member extending from a surface of the base member;
 - a handle, pivotally connected to the upper member, the handle being engageable with the catch member to lock the mechanism in at least one operating
 - 10 position, wherein means are provided for urging the handle towards the catch member.
2. A flip-top table mechanism according to claim 1, wherein a protector at least partially covers the catch.
- 15 3. A flip-top table mechanism according to claim 2, wherein the protector is formed from a plastics material.
4. A flip-top table mechanism according to any one of the preceding claims, wherein the means for urging the handle towards the catch member is a resilient
- 20 member.
5. A flip-top table mechanism according to any one of the preceding claims, wherein the means by which the base member is pivotally connected to the upper member is a first pivot pin.
- 25 6. A flip-top table mechanism according to claim 5, wherein the first pivot pin is a bolt.
7. A flip-top table mechanism according to any one of the preceding claims,
- 30 wherein the means by which the handle is pivotally connected to the upper member is a second pivot pin.

8. A flip-top table mechanism according to any one of the preceding claims, wherein the flip-top table mechanism is formed from cast aluminium.

5 9. A flip-top table mechanism according to claim 1 when appended with claim 7, wherein the dimensions of the components of the flip-top table mechanism are proportionally relative to the distance from the centre of the upper end of the table top support and the centre of the means for pivotally connecting the upper member to the handle.

10 10. A flip-top table having a table top and a table top support, the table top and table top support pivotally connected by a flip-top table mechanism, the mechanism comprising:

an upper member attached to the table top;

15 a base member attached to an upper end of the table top support, the base member being pivotally connected to the upper member;

a catch member extending from a surface of the base member;

a handle, pivotally connected to the upper member, the handle being engageable with the catch member to lock the mechanism in at least one operating position, wherein means are provided for urging the handle towards the catch member.

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11. A flip-top table mechanism substantially as hereinbefore described, with reference to, and as illustrated by, the drawings.

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Application No: GB0702782.4

Examiner: Gareth Jones

Claims searched: 1-11

Date of search: 13 June 2007

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X	1, 4, 5, 7, 10, 11 at least.	AT 404542 B (SESSEL UND HOLZWARENFABRIK) 28.12.1998. See figures and WPI Abstract, Accession No. 1998-261919[24].
A	-	US 5121697 A (BAUM et al) See figures 2 and 10 and cols 3-5.
A	-	US 5174225 A (REISE et al) See whole document.
A	-	US 4986195 A (DIFFRIENT) See figures 1-3, cols. 3 and 4.

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^X:

A4L; E2F

Worldwide search of patent documents classified in the following areas of the IPC

A47B

The following online and other databases have been used in the preparation of this search report

EPODOC, WPI

International Classification:

Subclass	Subgroup	Valid From
A47B	0003/08	01/01/2006
A47B	0013/00	01/01/2006