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(71) Applicant: **Ezech Limited**
Tsimshatsui, Kowloon (HK)

(72) Inventor: **Lau, Pui Chung**
St.Stephen's Lane, Midlevels (HK)

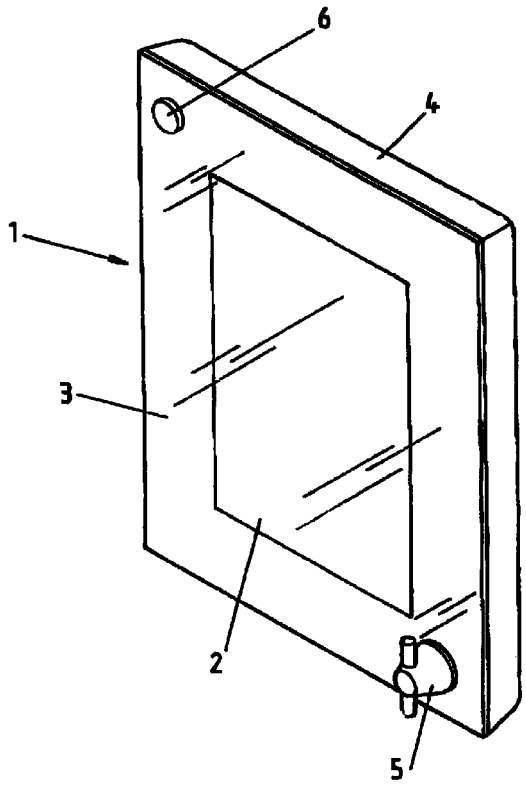
(74) Representative:
Votier, Sidney David
CARPMAELS & RANSFORD
43, Bloomsbury Square
London WC1A 2RA (GB)

(54) Display apparatus

(57) A picture frame (1) has a cover member (3) having a front and a rear and a viewing region such that a display media (2) such as a photo behind the cover member (3) is visible though the viewing region. A backing member (4) having a substantially planar front face of sufficient dimension to cover at least the viewing region of the cover member (3) is pivotally connected to the cover member (3). The pivot axis is at least substantially perpendicular to the front face of the backing member (4) and positioned outside the viewing region. A magnetic coupling (6) is provided between the cover member (3) and the backing member (4) to retain them in a pre-determined relative pivotal position.

The cover member (3) may comprise a transparent plastic sheet. A threaded connection may be provided to clamp the cover member (3) to the backing member (4). The pivotal connection (5) may be about this threaded connection.

FIG. 1



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Description

BACKGROUND TO THE INVENTION

Field of the invention

[0001] The present invention relates to display apparatus and in particular to apparatus in the style of picture frames for mounting and displaying small to medium size, thin, display media such as photos.

Description of the prior art

[0002] Picture frames are well known for displaying display media, such as photos, certificates or clippings, which capture the thin media between a transparent sheet, such as glass, and a backing board, such as a compressed medium or high density wood fibre board (befitting the intended application). Picture frames of this type commonly include a surrounding frame at the periphery which secures the transparent sheet and backing board with the thin display media there between, This surrounding frame is generally formed from a rigid material such as wood, aluminium or plastics.

[0003] In the prior art, exchange of the displayed media involves removing the backing board, removing the old media, setting the new media face down on the transparent sheet, or fixing the new media to the backing board, and reassembling. It is desirable that this process be simplified and shortened. Furthermore the process involves a degree of approximation and guesswork as the picture is either affixed to the backing board while the backing board is not within the frame, or is positioned on the transparent sheet in a face down configuration. Consequently it is difficult to ensure that the final configuration is that which is most desirable.

OBJECT OF THE INVENTION

[0004] It is therefore an object of the present invention to provide a display apparatus which goes some way to overcoming one or more of the above disadvantages or which will at least provide the public with a useful choice.

STATEMENTS OF INVENTION

[0005] In a first aspect the invention may broadly be said to consist in display apparatus comprising:

a cover member having a front and a rear and a viewing region such that a display media behind said cover member is visible through said viewing region,

a backing member having a substantially planar front face of sufficient dimension to cover at least said viewing region of said cover member,

a pivotal connection between said cover member and said backing member, having a pivot axis at least substantially perpendicular to said front face of said backing member and positioned outside said viewing region, and

magnetic location means for retaining said cover member and said backing member in a pro-determined relative pivotal position.

[0006] To those skilled in the art to which the invention relates, many changes in construction and widely differing embodiments and applications of to invention will suggest themselves without departing from the scope of the invention as defined in the appended claims. The disclosures and the descriptions herein are purely illustrative and are not intended to be in any sense limiting.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] The preferred embodiment of the present invention will now be described with reference to the accompanying drawings in which Figure 1 is a perspective view of a picture frame according to the present invention as viewed from the front in an orientation as if standing on a supporting surface (not shown),

Figure 2 is a front elevation of the picture frame of Figure 1,

Figure 3 is a cross-sectional elevation through II of the picture frame of Figure 2,

Figures 4a to 4c are front elevations similar to Figure 2 demonstrating the sequence of operations involved in securing a thin display media within a frame according to the present invention,

Figure 5 is a rear elevation of the frame of Figure 1 (with support leg removed), and

Figure 6 is a perspective view from the rear of the frame of Figure 1 in an orientation as if standing on a supporting surface (not shown).

DETAILED DESCRIPTION OF PREFERRED EMBODIMENT

[0008] Referring to Figures 1 to 3 a picture frame 1 is shown. The picture frame 1 includes a cover member 3 comprising, in this instance, a transparent plastics sheet, and a backing member 4. The frame is shown as in use with a thin display media 2 sandwiched between the transparent cover member 3 and the backing member 4.

[0009] While in the preferred embodiment of the present invention the cover sheet 3 is formed from a single sheet of transparent plastics, the operating mechanisms of the present invention may be equally applicable to display apparatus incorporating a bordering frame, in which case the bordering frame and transparent sheet may be provided as an integral

mechanically connected unit, or alternatively the edges of the transparent sheet may be retained within for example an annular rebate around the internal edge of a frame. In such case the pivotal connection 5 is preferably provided trough the frame portion of the cover member. Furthermore the cover member may comprise an open frame having a complete opening therethrough rather than just a transparent window, the periphery of the display media being clamped to the backing member by the frame.

[0010] A pivotal connection is provided between the cover sheet 3 and the backing member 4. The pivotal connection is provided by a threaded stud, projecting from handle 5, which passes through an aperture 13 in the cover sheet 3 and is secured in a threaded hole 18 in the backing member 4. The pivotal connection is provided adjacent one corner of the frame 1 outside the area in which a display media is most desirably located.

[0011] Adjacent the apposite corner of the picture frame a magnet 7 is provided within a hole 11 in the front surface of the backing member 4. To co-operate with the magnet 7 a small ferromagnetic stud 6 of substantially the same co-operating dimension as the magnet 7 is fixed in the transparent cover sheet 3. In the preferred embodiment the ferromagnetic stud 6 is provided passing through a hole 12 in the cover sheet 3 and is located at the desired depth there by a head of slightly largely diameter than the body of the stud. The stud preferably protrudes through the hole 12 almost to the rear face of the cover sheet 3 to be proximal to the magnet when the cover sheet 3 is in the predetermined relative pivotal position. The magnet and the stud may be an interference fit in their respective holes but preferably they are also glued, for example with an epoxy resin.

[0012] In use the thin display media 2 is provided between the rear face 9 of transparent sheet 3 and the front face 8 of the backing member 4 and is held there by being sandwiched there between. The effective location of the media 2 is enhanced by several inserts 10 having a higher co-efficient of friction than the front face of the backing member 4, and protruding slightly from the face, These inserts may be made of a soft elastic material such as vulcanised rubber. The rubber inserts 10 may be an interference fit within their respective holes but preferably they are also glued, for example with an epoxy resin.

[0013] While the backing member 4 could be manufactured from a relatively hard and strong material such as steel or aluminium which would tolerate a direct threaded connection within a hole formed therein, low cost and lightweight materials such as high density compressed wood fibre board are preferred. In consideration of this the threaded connection of the threaded stud 16 is preferably effected with a threaded receiving nut 14. The receiving nut is located in a recess 14 in the rear face of the backing member 4 and a hole 18 of smaller diameter than the recess 15 provides access to the threaded hole of the receiving nut. The receiving nut may be an interference fit in its hole but preferably it is also glued, for example with an epoxy resin.

[0014] In addition to securing the relative pivotal position by the co-operation of magnet 7 with ferromagnetic material 6 it is preferred that a stronger clamping effect is possible by tightening the handle 5 to clamp the cover sheet 3 between a bearing face 17 of the handle 5 and the front face 8 of the backing member 4. Threaded receiving nut 14 preferably has a flange external to the backing member 4 to spread any load generated by this tightening. With the additional security provided by this clamping it is considered that the magnetic connection provided by magnet 7 and ferromagnetic stud 6 need only be sufficient to provide positive accurate location of the cover 3 relative to the backing member 4 until the user can effect more permanent location by tightening the handle 5.

[0015] The sequence of actions involved in use of the picture frame 1 is depicted in Figures 4a to 4c. The picture frame 1 is shown in an initial open position with the handle 5 having been loosened by anti-clockwise rotation and the cover 3 subsequently having been pivoted in the direction of arrow 19 to reveal a substantial part of the backing member 4. Referring to Figure 4b a thin display media 2, such as a photograph, is positioned against the exposed portion of the backing member 4 and is slid beneath the cover sheet 3 and into its desired final position. The location of the display media 2 is enhanced by the higher friction and gripping elements 10. The cover sheet 3 is subsequently pivoted closed in the direction indicated by arrow 20 until the ferromagnetic insert 6 sits over the magnet 7. Being of substantially equal size the magnetic attraction provides a centring effect between the insert 6 and the magnet 7 leading to accurate location. The frame is depicted in Figure 4c with the cover sheet 3 in the closed position. The handle 5 is subsequently tightened by clockwise rotation as indicated by arrow 21. Tightening the handle 5 clamps the cover sheet 3 to the backing member 4, securing the relative pivotal alignment, and also increasing the sandwiching effect on the thin display media 2.

[0016] In performing the sequence of operations the display media 2 is in full view of the user, and consequently desired location of the media is easily obtained. Furthermore initial placement of the display media, and subsequent replacement work other display media is a simple operation that can be completed in a very short time and the construction of the display apparatus is such that the operation may be made frequently without damaging or degrading the apparatus.

[0017] Referring to Figures 5 and 6 the rear face of the backing member 4 is shown. While it would be possible to hang the frame 1 from a vertical surface such as a wall, it is preferred, and thought more likely, that at least in small sizes the frame would be utilised on desk tops and shelves and the like, and consequently for ver-

satility the frame has a support which may be configured for supporting the frame with either its long or short side resting on the supporting surface. To these ends a pair of metal bosses 23 are provided in the rear face of backing member 4, each boss 23 having a threaded receiving hole therein. A support stick 24, for example a metal rod, has a threaded end and may be rotationally secured within either boss 23 as desired.

[0018] This provides a stable and secure support in the desired orientation.

Claims

1. A display apparatus comprising:

a cover member having a front and a rear and a viewing region such that a display media behind said cover member is visible through said viewing region,
a backing member having a substantially planar front face of sufficient dimension to cover at least said viewing region of said cover member,
a pivotal connection between said cover member and said backing member, having a pivot axis at least substantially perpendicular to said front face of said backing member and positioned outside said viewing region, and
magnetic location means for retaining said cover member and said backing member in a pre-determined relative pivotal position.

2. A display apparatus as claimed in claim 1 wherein said cover member comprises a transparent sheet member with no discernable change in the character of the material across the extent of the sheet.

3. A display apparatus as claimed in either claim 1 or claim 2 wherein said magnetic location means comprises a magnet located on one of said backing member and said cover member and a ferromagnetic insert of substantially the same cooperating dimension as said magnet of the other of said backing member and said cover member.

4. A display apparatus as claimed in any one of claims 1 to 3 including clamping means manually operable to clamp said cover member to said backing member.

5. A display apparatus as claimed in claim 4 wherein said clamping means includes a threaded connection between a threaded shaft and a nut, rotation of said shaft relative to said nut causing clamping or releasing of said sheet, and said pivotal connection of said cover member involves rotation of said cover member about said threaded shaft.

6. A display apparatus as claimed in claim 5 wherein said nut is fixedly connected with said backing member and a threaded bolt having a hand manipulable head passes through an aperture in said cover member and has the thread thereof secured within said nut.

7. A display apparatus as claimed in any one of claims 1 to 6 wherein one or more elastic inserts are secured within apertures in said backing member and protrude from said apertures to a level above the surrounding level of said backing member.

8. A display apparatus as claimed in any one of claims 1 to 7 including a support means on its rear, said support means comprising a socket, and a removable cantilever support member extending from said socket.

9. A display apparatus as claimed in claim 8 wherein a plurality of said sockets, are provided on the rear of said display apparatus, each said socket being adapted to accommodate said removable cantilever support member, said sockets adapted, with said cantilever inserted in alternative ones thereof, to support said apparatus in a plurality of orientations.

10. A display apparatus substantially as herein described with reference to and as illustrated by the accompanying drawings.

FIG. 6

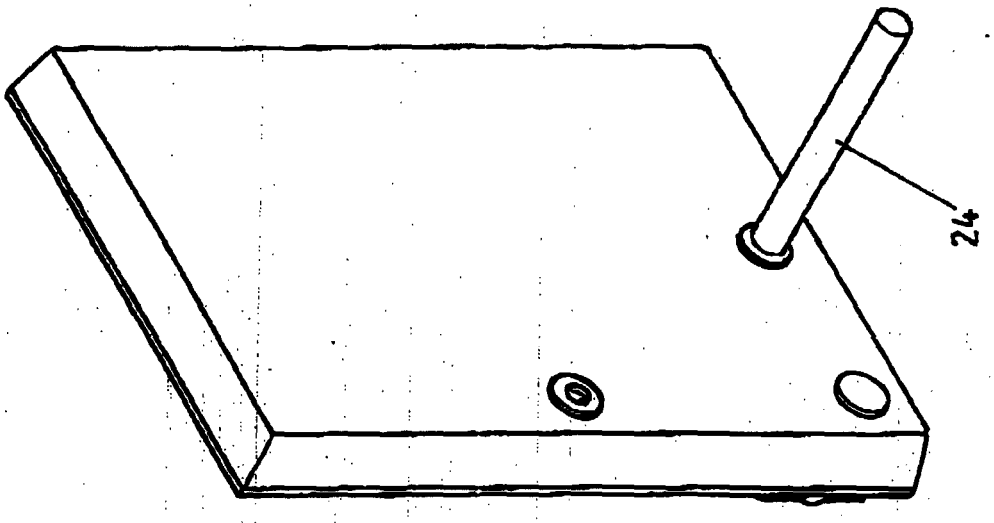
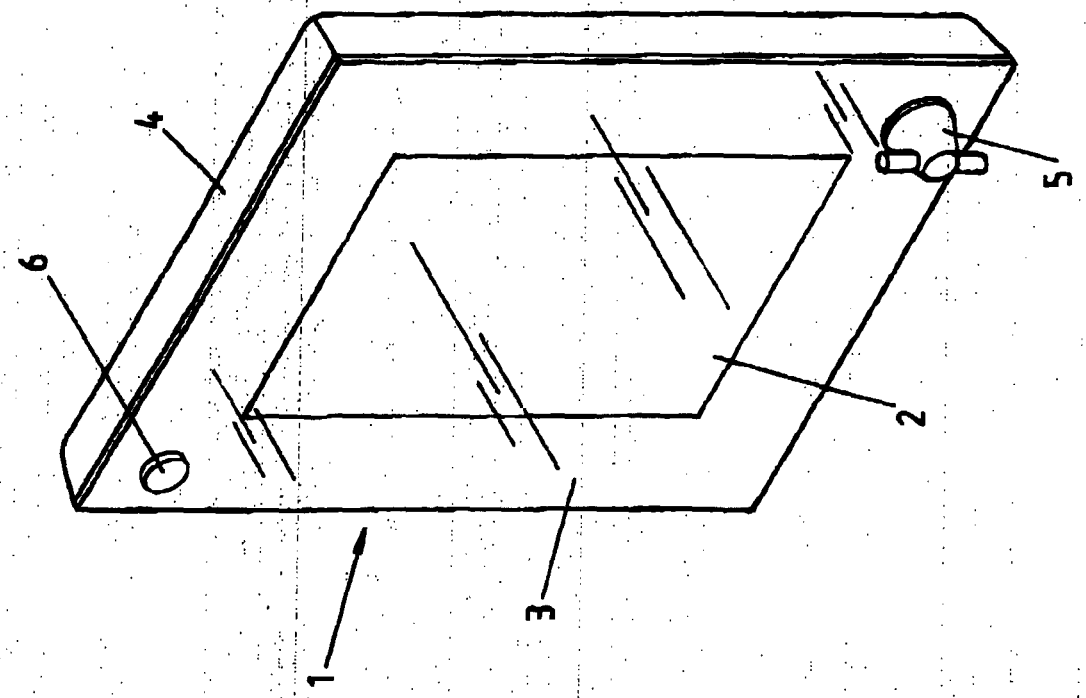


FIG. 1



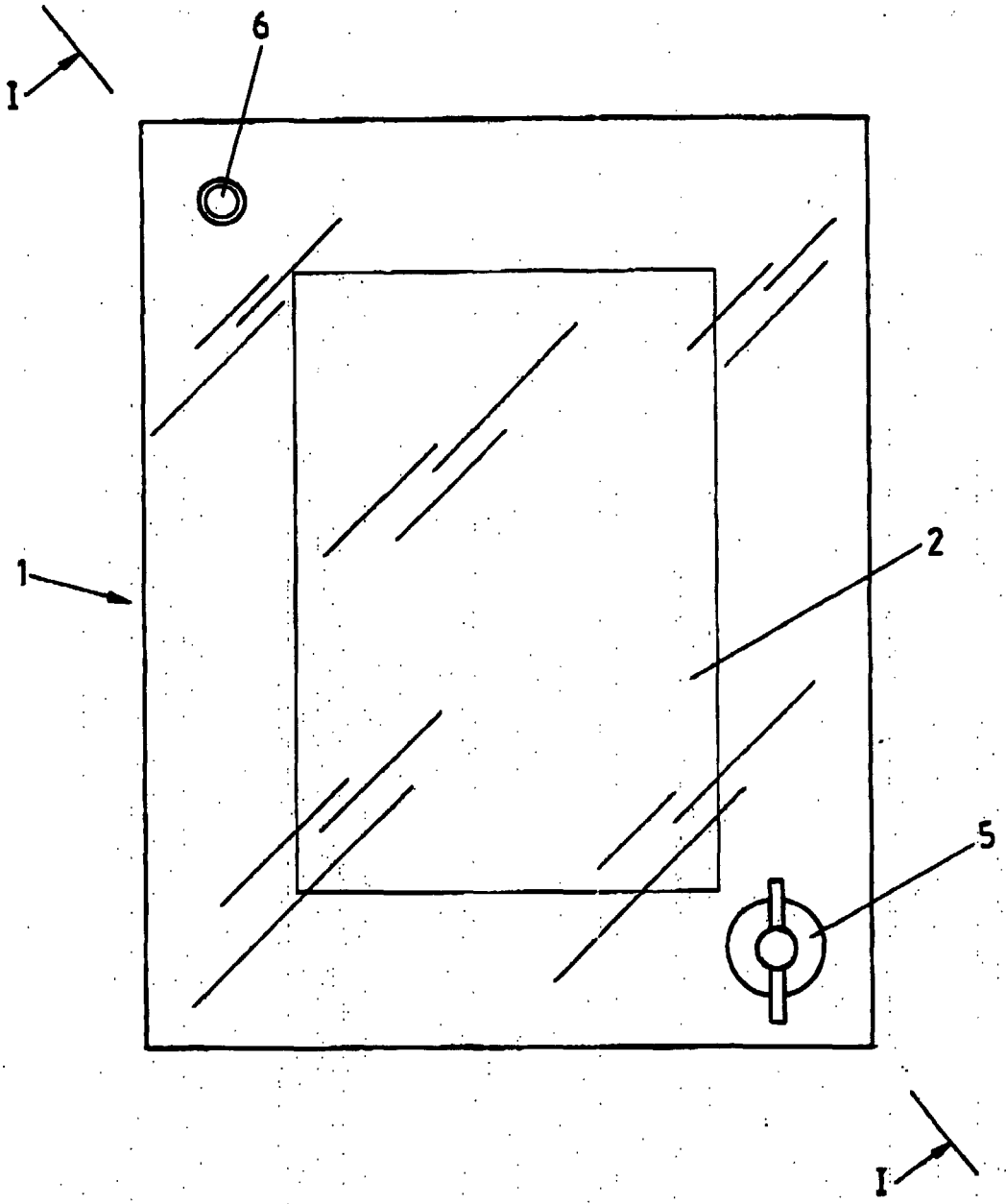


FIG. 2

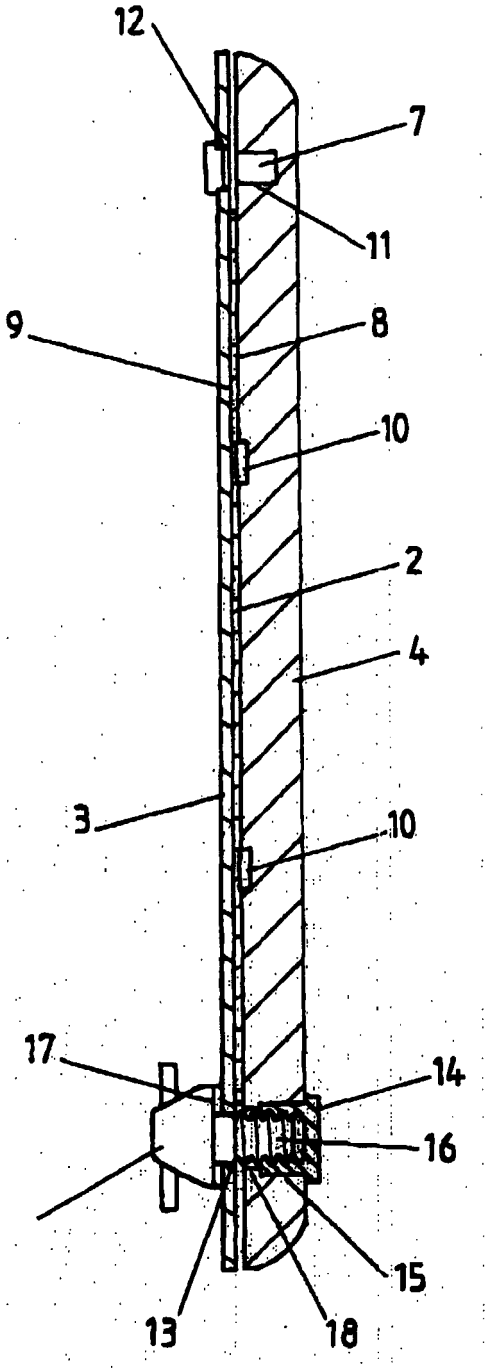


FIG. 3

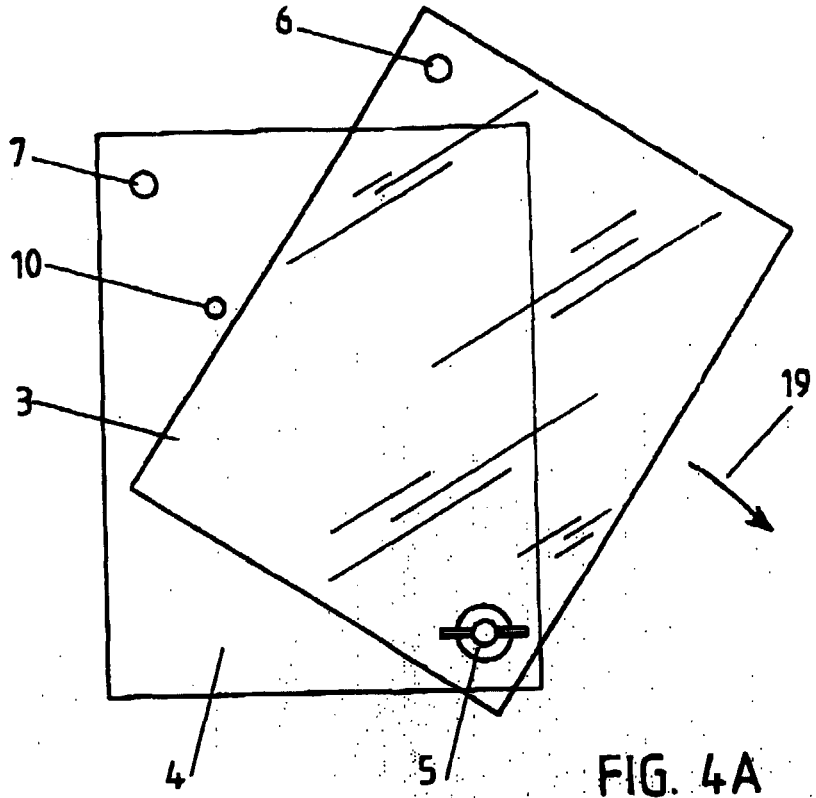


FIG. 4A

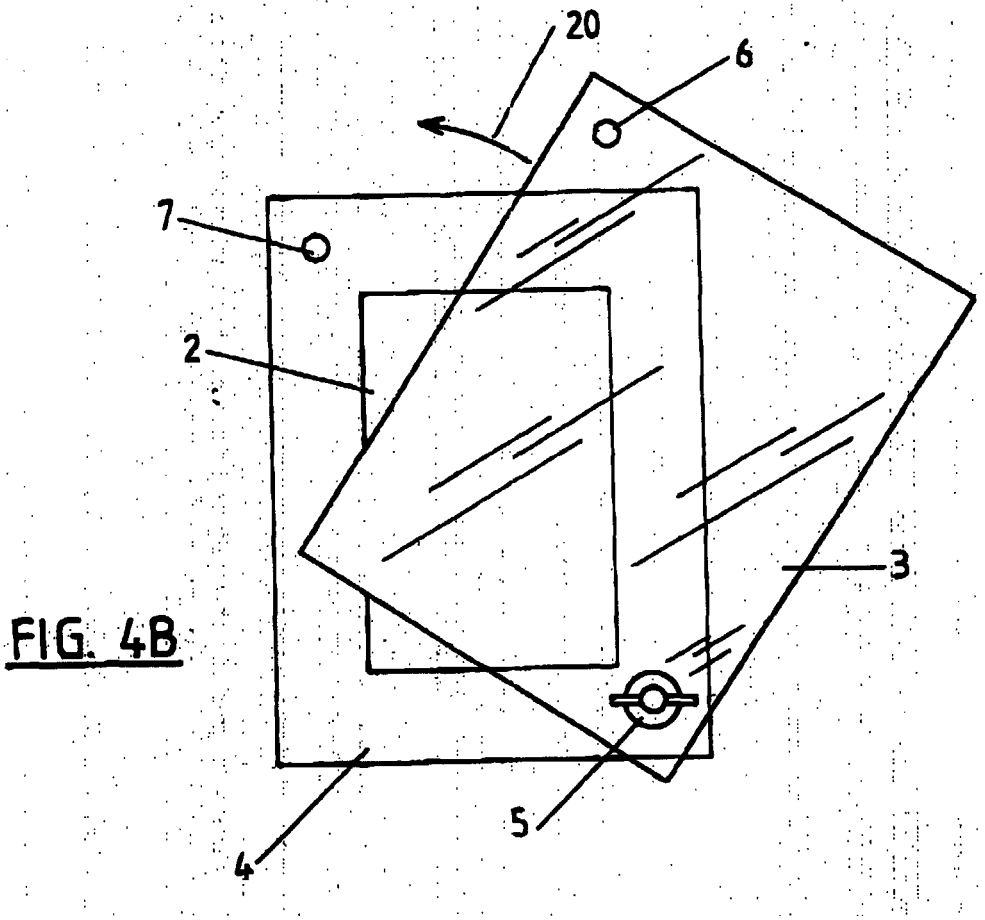


FIG. 4B

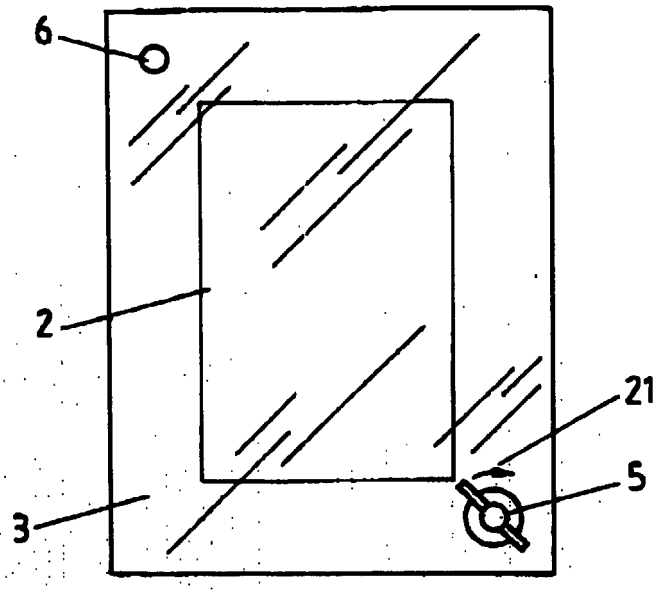


FIG. 4C

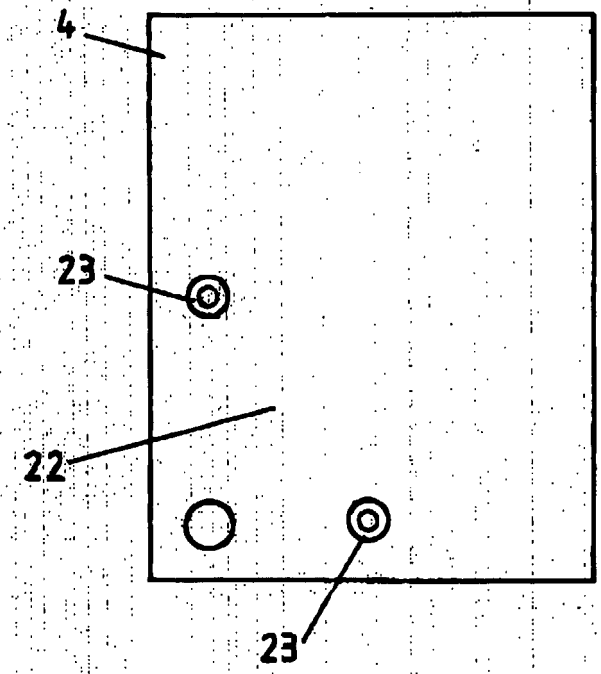


FIG. 5