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A device for locking cards or caches into place in the frame of a computer central unit

5 The present invention relates to a device for locking into place the cards installed in the frame of a computer central unit or alternatively, in the absence of cards, caches fitted so that their connectors are exposed at adjoining, oblong orifices in the rear face of the
10 frame, the cards being positioned by a sliding action and then locked in translation.

At present, cards are mounted on a level with the rear face of a frame of a computer central unit by sliding them in a slide means on a level with the card
15 connector, after which each card is locked in position by a screw. Each card is secured separately.

Although fixing screws is an everyday and relatively simple operation, particularly since the development of electric screwdrivers, it would be useful to simplify
20 this operation of installing or uninstalling cards in a central unit by eliminating the need to screw in each card separately and finding a means of securing cards which is capable of withstanding the stress to which computer frames are normally subjected.

25 To this end, the invention relates to a device of the type outlined above, characterised by:

- latch windows in the form of slots,
provided in the rear face of the frame upstream of the access orifices to the connectors in the
30 direction in which the cards are inserted by a sliding action,
- at least one clipping window at a certain distance

upstream of the latch windows, in the rear face of the frame,

- a latch comprising

- a body bearing latch fingers

5 * distributed in alignment with the gap of the connector slots,

* joined to a transverse connecting branch,

* folded back relative to the connecting branch,

10 - a clamping clip located at a distance from the latch fingers substantially corresponding to the gap between the clipping window and latch windows,

15 - the fingers being inserted in the latch slots so as to face the card connectors and locked by an elastic action as the latch is pivoted and the clip brought to bear elastically against the ends of the connectors in the clipping compartment.

20 This device is very easy to fit. Once the card or cards have been inserted in their slot, the fingers are slid through the latch windows and when the fingers have reached the end-of-travel position, the body of the latch is simply tilted so that the clamping clip enters its
25 clipping window. The fingers bearing against the end of the card connectors create a torque which tends to cause the body of the latch to pivot in the direction in which its clamping clip is released. Conversely, when the latch is fitted and the clamping clip is hooked in its window
30 the force of raising it creates a locking force which is applied to the connectors at the end of the cards and holds the unit firmly in place.

One extremely useful advantage of the invention is that it eliminates the screwing process: there is no need to provide a specific tool for the end user, the installer saves time if fitting large numbers and there
5 is no risk of damage to the electronics due to screws being lost.

By virtue of other features of the invention:

- the latch is made in a single piece from elastic metal sheet, cut out and die-punched;
- 10 - the latch fingers are extended by folded ends;
- the cross-piece and the body are provided with a stiffening rib;
- the fingers are folded at an angle substantially in excess of 90° relative to the branch and to the
15 body.

The present invention will be described in more detail below with reference to the appended drawings, of which:

- figure 1 is a perspective view of a part of the
20 rear face of a frame of a computer central unit, this view being taken from inside the frame,

- figure 2 is a perspective view of the latch of the locking device illustrated in figure 1,

- figure 3 is a plan view of the latch illustrated
25 in figure 2,

- figure 4 is a side view of the latch of figure 2,

- figure 5 is a view of the latch in which the fingers have already been positioned in the latch windows of the frame but in which the clip has still not been
30 locked against the rear face of the frame.

As illustrated in figure 1, the invention relates to a system of locking into place the connectors on the rear

edge of computer cards; these cards are generally fitted by sliding them in guides provided in the rear face of a frame of a central unit 1 so that the connectors are accessible from the rear of the frame through oblong
5 orifices which are not illustrated in the drawing.

The direction in which the cards are inserted is that defined by the arrow A. Conversely, in order to remove a card, it must be unlatched, as will be explained below, and slid in the direction opposite that denoted by
10 arrow A. Arrow A will be used as a means of defining a position upstream or a position downstream of a reference point.

Accordingly and as proposed by the invention, the rear face 1 has latch windows 21, 22, 24, the number
15 thereof corresponding to the number of connector slots 31, 32, 33, 34. These windows 21-24 are located upstream and adjacent to connector windows 31-34.

A little farther upstream, the rear face 1 has a clipping window 25.

20 The locking device for the connectors, comprising a latch 4, is shown in its locked position in figure 1. This latch 4 consists of a set of fingers 41-44 one above the other, spaced apart at a distance equal to that of the connector slots 31-34 or associated windows 21-24.
25 These fingers 41-44 are borne on a connecting branch 46 joined to the body 47, which in turn terminates with a clamping clip 45. The fingers are extended by folded-back tongues 411, 421, 431, 441 and the latch 4 as a whole, illustrated in this embodiment, is made by a stamping and
30 folding process in one piece from elastic metal sheet or plastics material. The shape of the folded arrangement is clearly illustrated in figure 4. This plan view

specifically shows the fold angle α between the fingers 41-44 and the connecting branch 46 and body 47 located in one plane. This side view also shows the shape of the clip 45, made by two folds of a tongue to form a
5 triangular shape with its sides 451, 452, and an end forming a stop 453 for the clipping action. The stop 453 continues into an end 454 which is inserted in an orifice 455 of the body 47 (figures 2 and 3).

The shape of the cambered end of each finger enables
10 the card to be locked in two directions.

The connecting branch 46 and the body 47 are preferably stiffened by an indentation forming a rib 481, 482.

The fold between the fingers 41, 44 and the plane of
15 the body 47 is preferably made along an angle α greater than 90° in order to create an elastic torque.

The way in which the latch 4 is fitted into the rear face after the connectors have been inserted in their guide is clearly illustrated in figure 5. In this
20 drawing, the fingers 41-44 are firstly inserted in the latch windows 21-24, after which the body 47 with the connecting branch 46 is tilted in the direction of the arrow B so as to pivot about the joining ridge 49 between the fingers 41-44 and the connecting branch 46. As a
25 result of this pivoting movement the clip 45 is pushed into its clipping window 25. During this movement, the part 452 is compressed against the part 451 of the clip 45 so that the widest part of the clip 45 passes through the entrance of the window 25 and the stop 453 locates
30 behind the edge of the window 25, locking the latch relative to the rear face 1. The latch is removed by compressing 451 and 452 manually inside the frame in

order to release the stop 453 from the rear face or edge of the window 25 and release the latch by a pivoting action in the direction opposite that of arrow B, after which the fingers 41-44 are pulled out. The connectors
5 and the cards can then be removed.

CLAIMS

1) A device for locking into place the cards or caches installed in the frame of a computer central unit, the
5 connectors of which are exposed by adjacent, oblong orifices in the rear face of the frame, the cards being slid into position and then locked in translation, comprising

- latch windows (21-24) in the form of slots,
10 provided in the rear face of the frame (1), upstream of the access orifices to the connectors, in the direction in which the cards are inserted by a sliding action,

- a latch (4) comprising a body (47) bearing latch
15 fingers (41, 44)

* distributed in alignment with the gap of the connector slots,

* joined to a transverse connecting branch
20 (46), folded back relative to the connecting branch (46),

- the fingers (41-44) being inserted in the latch slots (21-24) so as to face the card connectors and locked in translation by an elastic action,

characterised in that

25 - the rear face has at least one clipping window (25) at a certain distance upstream of the latch windows (21-24) in the rear face of the frame,

- the latch (4) comprises a clamping clip (45) located at a distance from the latch fingers (41-44)
30 corresponding substantially to the gap between the clipping window (25) and the latch windows (21-24), the clip (45) being brought to bear elastically



clipping window (25) and the latch windows (21-24),
the clip (45) being brought to bear elastically
against the ends of the connectors in the clipping
compartment (25) as the latch (4) is pivoted.

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2) A device as claimed in claim 1,
characterised in that
the latch (4) is made in one piece from elastic metal
sheet, being cut and die-punched.

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3) A device as claimed in claim 1,
characterised in that the latch fingers (41-44) are
extended by folded ends (411, 421, 431, 441).

15 4) A device as claimed in claim 1,
characterised in that
the cross-piece (46) and the body (47) are provided with
a stiffening rib (481, 482).

20 5) A device as claimed in claim 1,
characterised in that
the fingers (41-44) are folded at an angle (α)
substantially in excess of 90° relative to the branch
and the body.

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