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A tray of a floppy disk drive with a latch tongue for a frame of a central computer unit

5 The present invention relates to a tray of a floppy disk drive, removably mounted in the frame of a central computer unit.

At present, the tray of a floppy disk drive slides in a double rail provided in the frame and is locked into
10 place by screws inserted in flange tabs forming a bracket on the front edge of the tray. In order to work on the disk drive or replace it, the screws holding the tray have to be unscrewed and the tray removed before work can start.

15 Although fitting screws is not, in itself, a lengthy operation in isolation or performed now and again, this is not the case with assembly on an industrial scale.

The objective of the present invention is to facilitate the fitting of a floppy disk drive tray in a
20 frame and to simplify its dismantling or removal whilst securing the tray in the frame so that it will withstand the standard tests to which this type of equipment is subjected (impacts, sudden accelerations, etc.).

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

A. a tray comprising:

- * a frontal cut-out portion in the front edge of at least one of the sides of the tray,
- * a cut-out portion with a latching cross-member aligned with the frontal cut-out portion, this
30 cross-member forming a passage projecting beyond the plane of the side of the tray,



B. a latch tongue with two legs,

- * a rear leg provided with a latching tab extending beyond its plane,

- * a front leg elastically joined to the rear leg and provided with front and rear stops,

C. the rear leg being inserted in the compartment formed by the cross-member, its latching tab being hooked on the cross-member to prevent the tongue from being pulled out relative to the tray,

- * the front leg and its stops being movable so as to elastically straddle the edge of the front of the frame, extending over the casing by the frontal cut-out section, in order to allow the tongue to be deformed and the stops released allowing the tray to be pulled out:

Once it has received the floppy disk drive, the tray proposed by the invention simply slides in the slot of the frame and the latching tab is hooked onto the edge of the opening of the front face of the frame to lock the tray. Held in this latched position due to its natural shape, the tongue can not be released other than by elastically deforming it. The low weight of the tongue means that it will not be deformed, even under the effect of high accelerations of the type inherent in this type of equipment according to various current standards.

The latch tongue is positioned in the drawer automatically by a simple sliding and latching action at the end of its travel. This latch mechanism can not be released by acting on the accessible end of the tongue, for example to unlock the tray. Only by accessing the latch tongue by the rear leg can the latter be moved above the cross-member to release the latch tongue, which



might have to be replaced.

This design offers the advantage of dispensing with screws and a tool, thus considerably simplifying installation.

5 By virtue of another advantageous feature, the rear leg of the tongue has a widened section forming a travel stop, which is brought to bear against the front edge of the cross-member of the recessed cut-out section.

10 The front and rear stops of the front leg of the tongue are triangular pieces folded in the plane perpendicular to the plane of the front leg, which is particularly practical. Apart from the fact that the triangular shape of the stops naturally lifts the tongue when locking the tray, it also makes the stops
15 particularly resistant to the stress exerted on them in the longitudinal direction without at the same time impairing the unlocking action, which is effected simply by raising the front leg to release the stops which were straddling the edge of the orifice in the front face.

20 Generally speaking, the latch tongue is provided at the bottom half of the tray. However, this latch tongue and the various means needed to fit it and operate it could also be provided on the side faces of the tray or, if necessary, on the top.

25 It would also be possible to increase the number of tongues for exceptional situations or as a means of strengthening against specific stress.

As a result of another advantageous feature of the invention, the rear leg and the front leg subtend an
30 obtuse angle in the normal position, corresponding to the position in which the front leg is locked with front and rear stops on the edge of the opening of the frame,



unlocking being effected by opening up this angle by elastically bending the front leg relative to the rear leg around the joining edge.

In order to facilitate the unlocking operation and
5 avoid the risk of injury, the front leg of the tongue terminates in a rounded end forming a gripping end.

Due to the natural downward deformation of the tongue in the locked position, it does not impair access to the insertion slot for the floppy disk in any way, nor
10 the movement of the cover optionally closing off the slot through which the floppy disk is inserted in the drive.

In order to position the tongue and prevent it from pivoting in its plane, the cross-member has a recess opening into its front edge and the rear leg has a boss
15 in a matching position so that it engages in the recess when the tongue is inserted in the tray.

Finally, in order to facilitate insertion of the tongue, the end of the rear leg terminates in a bevelled shape.

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

- figure 1 is a perspective view of part of a front face of a frame of a central computer unit,
- figure 2A is a simplified view in cross section
25 showing the tongue in the unlocked position,
- figure 2B shows the tongue in the locked position,
- figure 3 is a plan view of the latch tongue,
- figure 4 is a side view of the latch tongue,
- figure 5 is a perspective view of the latch
30 tongue,
- figure 6A is a plan view of the base of the tray designed to receive the tongue proposed by the invention.



- figure 6B is a perspective view of the base of the tray illustrated in figure 6A,

- figure 6C shows the latch tongue in a position which is the counterpart to that of the part of the tray
5 illustrated in figure 6B.

As may be seen from the drawings, the invention relates to a drive for a floppy disk, not illustrated, which fits in the frame 1 of a central computer unit. The tray 2 is mounted so that it can be removed from the
10 frame to allow access to the disk drive so as to repair or replace it.

During normal use, however, this tray must remain locked in the frame and be capable of withstanding any impacts to which the frame might be susceptible,
15 particularly as part of standard testing procedures.

The tray slides in rails provided in the frame.

At the front, the tray has peripheral tabs 21, 22, 23, folded to form brackets, these tabs formerly having been used to screw the tray onto the frame.

20 On a level with its front edge, for example the folded edge 22, the tray 2 has a frontal cut-out portion 3 (see figures 6A, 6B in particular) and, aligned behind it in the sliding direction of the tray, is a cut-out portion 4 with a latching cross-member 41. This cross-
25 member 41 is of a width (a) that is narrower than the depth (b) of the cut-out portion to leave a clearance 42, 43 on either side. Furthermore, the latching cross-member 41 is recessed relative to the plane of the tray so that it projects outside the body of the tray; in the example
30 illustrated here, the cross-member projects downwards.

Figure 6B also shows the folded axis line XX corresponding to the axis of symmetry of the latch tongue



described above.

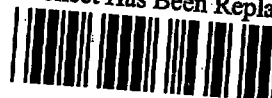
The tray receives a latch tongue 5 (figures 3 to 5) with two legs: a rear leg 51 designed to be inserted via the compartment formed by the cross-member 41 described above and a front leg 52 elastically joined along the fold line 53. The tongue is symmetrical relative to an axis XX (figure 3).

Along each edge, the front leg 52 has a rear stop 521, 522 and a front stop 523, 524, each consisting of a triangular piece folded to form a bracket relative to the plane of the front leg 52 (figure 4).

The front leg 52 terminates with a sintered part 525 providing a gripping element. On a level with the fold line 53, the rear leg 51 is provided with a widened section 511 forming stop edges 512, 513 limiting the degree to which this latch tongue penetrates its compartment in the tray. Close to the rear end, the leg 51 is provided with a latching tab 513 cut out from the body of the leg 51. The rear end terminates in a bevelled part 514 and finally, a boss 515 is provided on a level with the edges of the stop 512.

This boss 515, preferably positioned on the axis of symmetry XX, is intended to be located by sliding in a recess 411 provided in the cross-member 41 (figures 6A, 6B).

The latch tongue 5 is placed on the tray 1 by inserting it through the frontal cut-out portion 3 and the rear leg 51 inserted in the passage formed by the cross-member 41 and the base bordering the two orifices 42, 43 of the cut-out portion 4. At the end of its travel, the latch tab bears against the rear edge 412 of the cross-member 41 and locks the tongue 5 firmly to the



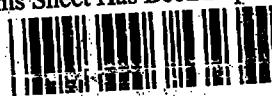
tray.

The tray can thus be fitted in the frame. The tray is locked and unlocked relative to the frame by means of its latch tongue, as is clearly illustrated in figures 5 2A, 2B. From the position illustrated in figure 2A immediately before being unlocked, the front leg 52 is raised in the direction of the arrow B so that the rear stops 521, 522 can move above the edge of the opening receiving the tray in the front face of the frame 1.

10 The front part 52 is brought into this position by elastically lifting the front leg 52. In the natural position, illustrated in figure 2B, the front leg 52 is lowered and the front and rear stops lock the tray into place.

15 The latch tongue 5 is preferably made from elastic metal sheet, preferably stainless steel sheet.

The means proposed by the invention and described above may also be used for mounting guides for drives in another frame. The cut-out portions of the rails will 20 match those of the drive tray and the frame will be of a similar design.



CLAIMS

- 1) A floppy disk drive tray removably mounted in the frame of a central computer unit,
- 5 characterised by
- A. a tray (2) comprising:
- * a frontal cut-out portion (3) in the front edge of at least one of the sides of the tray (2),
 - * a cut-out (4) portion with a latching cross-member (41) aligned with the frontal cut-out portion (3), this cross-member (41) forming a passage projecting beyond the plane of the side of the tray (2),
- 10
- B. a latch tongue (5) with two legs (51, 52),
- 15 * a rear leg (51) provided with a latching tab (513) extending beyond its plane,
 - * a front leg (52) elastically joined (53) to the rear leg (51) and provided with front and rear stops (521-524),
- 20 C. the rear leg (51) being inserted in the compartment formed by the cross-member (41), its latching tab (513) being hooked on the cross-member (41) to prevent the tongue (5) from being pulled out relative to the tray (2),
- 25 * the front leg (52) and its stops (521-524) being movable so as to elastically straddle the edge of the front of the frame (1), extending over the casing by the frontal cut-out section, in order to enable the tongue (5)
 - 30 to be deformed and the stops (521-524) released to allow the tray (2) to be pulled out.





2) A tray as claimed in claim 1,
characterised in that

the rear leg (51) of the tongue (5) has a widened section
5 (511) forming an insertion stop (512, 513) which is
brought to bear against the front edge of the cross-
member (41) of the recessed cut-out section (4).

3) A tray as claimed in claim 1,
10 characterised in that

the front and rear stops (521-524) of the front leg (52)
of the tongue (5) are triangular pieces folded in the
plane perpendicular to the plane of the front leg.

15 4) A tray as claimed in claim 1,
characterised in that

in the normal state, the rear leg (51) and the front leg
(52) subtend an obtuse angle (α), corresponding to the
position in which the front leg (52) is locked, with
20 front and rear stops (521-524) on the edge of the opening
of the frame, release being effected by opening this
angle by elastically bending the front leg relative to
the rear leg around the joining edge.

25 5)
A tray as claimed in claim 1,
characterised in that

the front leg (52) terminates with a rounded end (525)
forming a gripping end.

30

6) A tray as claimed in claim 1,
characterised in that



the cross-member (41) has a recess (411) opening in its front edge and the rear leg (51) has a boss (515) in a matching position so as to locate in the recess (411) when the tongue (5) is inserted in the tray (2).

5

7) A tray as claimed in claim 1, characterised in that the end (514) of the rear leg (51) terminates in a bevelled shape.

