

Apparatus for storing recording media,
particularly for installation in motor-vehicles.

The invention relates to an apparatus for storing
a recording medium, such as an audio or video cassette,
or a compact disc.

EP-A-83108472.8 discloses an apparatus for storing
5 recording media, such as magnetic tape cassettes,
discettes, records or video discs, with a substantially
rectangular housing member, a transport slider member
guided in the housing member and constructed to receive
the recording media, and which conveys the recording
10 media from a storage position, in which they are enclosed
in the housing member, into a removal position in which
they can easily be grasped, a spring arrangement which
biases the transport slider member into the outer removal
position, and a locking arrangement, which in the storage
15 position of the transport slider member comprises elements
engaging positively in each other, can be locked auto-
matically when the transport slider member is pushed in
out of its removal position, and comprises at least one
coupling element which is displaceable relative to one of
20 the members being locked but is supported in the direction
of movement of the slider member.

In the known apparatus, the locking of the slider member in the housing is produced by the fact that the coupling element comes into a locking engagement both with the slider member and with the housing member when the slider member has been pushed in and pushed outwards again a little way by its bias spring. Such apparatuses are readily installed in motor vehicles, the position of installation depending primarily on the type of construction of the vehicle. For ergonomic reasons, however, an effort is always made to select a position which facilitates operation, and that happens to be the one in which the slider member opens in the opposite direction to the direction of travel.

In order to open the known container, the slider member is pushed a short way into the housing, whereupon the coupling element is freed. In the preferred position for installation in vehicles which has already been mentioned, however, the container and all its parts are of course subjected to the same forces as the vehicle, its components and also its passengers, with the result that when there is heavy deceleration of the forward travel, particularly during emergency braking, the slider, owing to its inertia, moves inwards relative to the housing, which is braked with the vehicle, and the locking system is thus released unintentionally. This drawback, which is

unacceptable for use in motor vehicles, also applies to similar lock constructions in which the release of the locking system also is effected by pushing the slider member into the housing (cf. German Offenlegungsschrift 25 21 371).

Another known apparatus which is widely marketed is described in German Patent No. 22 48 408. In this, there is moulded on to the slider member a button which, in order to release the locking system, is lifted approximately perpendicular to the direction of the movement of the slider member, out of a catch formed in the housing; the button, which acts as a release element and is connected to the floor of the slider member by way of a leaf spring, thereby actually executes a pivoting movement.

In this type of construction, the risk of unintentional release during a braking manoeuvre is still not excluded, since during heavy braking of the vehicle the inertia of the button also leads to a turning moment acting on it which may be sufficient for release; this is aided by the fact that the inertia forces act on the slider member and the magnetic tape cassette which may be housed in it as a whole and eliminate the frictional connection between the locking extension of the button and the catch in the housing associated with it.

An object of the invention is to provide apparatus for storing a recording medium, such as a magnetic tape cassette, a diskette, a record or a video disk, having a locking arrangement capable of being made in a form

5 substantially insensitive to acceleration or deceleration of the whole apparatus when the latter is, for instance, installed in a motor vehicle.

The present invention provides an apparatus for storing a recording medium, such as a magnetic tape

10 cassette, a diskette, a record or a video disc, the apparatus comprising: a housing member, a transport slider member guided in the housing member, arranged to receive a recording medium, and movable from a storage position within the housing member into an outer removal

15 position in which a recording medium placed in the transport slider member can readily be taken hold of by the user, a spring arrangement which biases the transport slider member into the outer removal position, and a locking arrangement which comprises elements mechanically

20 engaging each other in the storage position of the transport slider member, which can be locked automatically when the transport slider member is pushed inwardly from its removal position and which includes at least one catch element which is displaceable relative to one of

25 the members being locked but is

supported against displacement in the direction of movement of the slider member, wherein on one of the members, a release element for releasing the catch element is provided, which release element
5 is so guided as to move substantially in the direction of insertion of the slider member, which release element acts against a spring bias and which release element serves to unlock the catch element.

The release element forms with its bias spring
10 an oscillatory system which can of course be deflected by means of external forces. It is, however, possible, by means of corresponding dimensioning of the parts (mass of the release element, bias force of the spring), to ensure that deflection sufficient to release the slider member
15 can only occur at rates of acceleration or deceleration which are not attained in practical use, even in the case of a normal rear-end collision of a motor vehicle.

Apparatus for storing recording media, such as magnetic tape cassettes, diskettes, records or video discs, constructed in accordance with the invention will now be described by way of example only with reference to the accompanying drawings, in which:

Fig. 1 shows a first apparatus according to the invention in a diagrammatic longitudinal sectional view,

10 Fig. 2 shows an exploded view in perspective, partly broken away, of the apparatus according to Fig. 1,

Fig. 3 shows a second apparatus according to the invention in a similar manner to Fig. 2,

15 Fig. 4 shows a further apparatus according to the invention in section parallel to a compact disc stored in the apparatus,

20 Fig. 5 shows a partial section along the line 5-5 in Fig. 4,

Fig. 6 shows a view of the rear edge of a disc holder of the apparatus of Figure 4,

25 Fig. 7 shows a partial section similar to Fig. 5 in the region of a release button of the apparatus of Figure 4,

Fig. 8 shows a detail from Fig. 5, greatly enlarged compared to the latter,

5 Fig. 9 shows a partial side view of the formation of a front wall unit of the apparatus of Figure 4,

Fig. 10 shows a section parallel to the direction of movement of a slider member of a further apparatus according to the invention in which a slider member is provided for each compact disc,

10 Fig. 11 shows a partial side view of such a slider member,

Fig. 12 shows a partial section of Fig. 10 in the region of a button of the apparatus of Figure 10,

15 Figs. 13 and 14 show two sections, normal to each other, through a further apparatus according to the invention for storing compact cassettes,

20 Fig. 15 shows a further apparatus according to the invention, in a view similar to Fig. 10, Fig. 16 is a partial front view of the apparatus according to Fig. 15,

25 Figs. 17 and 18 show a further apparatus according to the invention in a view similar to Figs. 15 and 16,

Fig. 15 shows a further apparatus according to the invention, in a view similar to Fig. 10,

5 Fig. 16 is a partial front view of the apparatus according to Fig. 15,

Figs. 17 and 18 show a further apparatus according to the invention in a view similar to Figs. 15 and 16,

10 Fig. 19 shows, partly in perspective, the apparatus according to Fig. 17, 18 in the opened state,

Figs. 20 to 22 show, in three sections normal to one another, a further apparatus according to the invention,

15 Figs. 23 to 25 show, in a manner similar to Figs. 20 to 22, a further apparatus according to the invention, and

20 Fig. 26 shows the last-mentioned apparatus in perspective in partial section, with a slider member of the apparatus partly pushed out.

Referring to Figs. 1 and 2, an apparatus for storing a magnetic tape cassette has a housing 10 with a top panel 12, a floor panel 14, side walls 16 and rear wall 18. The apparatus includes a slider member 20 comprising a base plate 22, a back plate 24 and a catch

25

housing 26. Projecting upwards from the base plate 22 are two lugs 28 which act as locking lugs for the tape hubs of a magnetic tape cassette stored in the apparatus. A helical compression spring 30 biases the slider member into the open position shown in Fig. 1. This open or end position is defined by stop lugs 32, moulded on to the underside of the base plate 22, which co-operate with the ends 34 of guide slots 36 in the floor panel 14 of the housing.

10 The catch housing 26 is moulded on to the slider member base plate 22 and has a top wall 40, a rear wall 42 and side walls 44. The front of the catch housing is closed by means of a front plate 46. Preferably, the parts 10 and 20 are injection-moulded from thermoplastic plastics material, and in that case 15 the front plate can be secured by adhesive bonding or, preferably, ultrasonically welding. Centring means for the front plate, such as complementary edge flanges, may be provided if desired but are not illustrated.

20 Inside the catch housing 26, the base plate 22 has two apertures 48 through which projecting parts 50 of a catch 52, inserted in the catch housing, extend downwards. Arranged laterally near the apertures 48 are guide blocks 54, between the facing guide surfaces of 25 which the catch 52 is guided. Arms 56 with end fingers

58 extend laterally from the edge of the catch 52 opposite to the projecting parts 50. The size of the catch is such that the fingers 58 just rest against the underside of the catch housing wall 40 when an edge 60 of the catch which lies between the projecting parts 50 sits on the upper side of the base plate. In this position the projecting parts 50 project through the aperture 48 and extend further downwards by a distance which is somewhat less than that corresponding to the thickness of the housing floor panel 14. In the pushed-in position of the slider member, the projecting parts 50 then engage in apertures 62 in the floor panel 14 and hold the slider member in the housing against the bias of the spring 30.. On their side facing towards the housing, the projecting parts 50 are provided with oblique surfaces 64 which come up against the front edge 66 of the housing floor panel 14 when the slider member is pushed in out of the position according to Fig. 1. The catch 52, with its arms 56 being resiliently deformed, is thereby deflected upwards so that the slider member can be pushed in as far as the inner end position in which the catch drops into the apertures 62 with the arms 56 being released from tension.

The front plate 46 has, in alignment with the catch edge 60, an aperture 68 in which a button 70 acting as a

release member is accommodated so that it can slide. The button 70 has flanges 72 which rest against the parts of the inside of the front plate 46 surrounding the aperture 68. In this position, a wedge-like extension 74 of the button engages beneath the edge 60 of the catch which is somewhat bevelled for this purpose. In order to release the slider member, the user presses the button, whereby the catch is lifted out of the apertures 62 against the resilient deformation of the arms 56 by the wedge effect of the extension 74. The dimensions of the parts are such that the end edge 76 of the extension 74 does not yet meet the catch housing wall 42 when the locking system releases itself. The spring 30 can accordingly push the slider member outwards for a short distance, thus preventing the projecting parts 50 returning again to the apertures 62 if the user releases the button. For closing, the user presses on the front plate somewhere near the button.

When the arms 56 are released from tension, the button is also guided back into its rest position as a result of the co-operating wedge surfaces.

Catch 52 and button 70 are, for preference, also injection-moulded parts made from thermoplastic plastics material. Since the arms 56 are subjected to no more than brief resilient deformation and are loaded neither

in the closed nor in the open position of the slider member, there is no risk of permanent deformation due to cold flow.

In the embodiment according to Fig. 3, inside a
5 catch housing 126 a catch 152 is housed so that it can slide normal to the direction of movement of the slider member. A lower edge 180 of the catch rests on a slider member base plate 122, and its upper edge 182 is guided
10 along a rib 184 moulded on to a wall 142 of the catch housing. At one end (on the left in Fig. 3) the catch 152 has an integral spring arm 156 with an end finger 158, which after assembly supports itself in the corner between walls 144 and 140 of the catch housing. From the lower edge 180 of the catch a projecting part 150
15 projects downwards, engages through an aperture 148 in a base plate 122, and in the closed position locks itself in an aperture 162 of the housing floor panel 114.

When the slider member 120 is pushed in, the oblique surface 164 of the projecting part 150 slides on a com-
20 plementary oblique surface 186 of the front edge 166 of the housing. The catch is thereby so deformed in the region of two connecting arms 188 that the projecting part can slide over the housing floor panel 114 until the extension drops into the aperture 162 with these arms
25 188 being released from tension.

When the catch 152 is displaced laterally (to the left in Fig. 3), with resilient deformation of the arm 156 occurring, the projecting part 150 comes into alignment with a slot 190 which extends from the front edge 166 of the housing floor panel 114 immediately adjacent to its oblique surface 186 as far as the aperture 162. The ejector spring of the slider member (not shown in Fig. 3) can then push the released slider member outwards, with the extension 150 being guided along the slot 190. After passing the front edge 166, the arm 156 is unloaded again and pushes the catch back into its initial position.

On the side of the catch facing the front plate 146, on either side of the connecting arms 188 in each case, pairs of wedges 192 are moulded on to the catch. Each pair of wedges has associated with it a button 170 guided in an associated aperture 168 and supported by means of flanges 172. The buttons are hollow (the hollowness of only one button is actually shown in the drawing), and in each case one edge 194 of the aperture and an outer edge 196 of each button co-operates with one wedge in each case of the associated pair of wedges 192 in such a way that when pressure is exerted on the button the catch 152 is displaced laterally. The dimensions of the parts are such that the operation

during release are analagous to that according to Figs. 1 and 2. Release is not prevented by the aperture 148, since the latter is correspondingly wider than the aperture 48 of Figs. 1 and 2.

5 In this way it is therefore possible to release one and the same catch with a plurality of buttons. This feature is provided in cases when the buttons have also a further function to fulfill. For example, the apparatus may serve to house in only one slider
10 member a plurality of transport platters, each for a respective data carrier, for example, a compact disc, which transport platters can be selected by means of the buttons, so that the slider member always carries along with it only one of the transport platters, while
15 the others are kept back in the housing. Since this function is not a subject of the present invention, this has not been drawn; it is sufficcient to refer to EP-A-83108472.8.

Figs. 4 to 9 show an embodiment in which a respective
20 slider member (hereafter referred to as "holder") is provided for each of a plurality of compact discs.

A particular number of disc holders is housed in a common housing 300. The housing has guide ribs 302 moulded on to the side walls inside, engaging in corresponding guide grooves 304 of the individual disc holders,
25 and also spring arm grooves 306 recessed into the inside

of the rear wall facing towards the housing opening. The substantially platter-shaped disc holders have arms 308 moulded on to them laterally which arms can be deflected inwards resiliently and have on their free ends hook-like stop extensions 310 which engage in associated lateral apertures 312 in the housing side walls. When the holders are pushed into the housing during assembly the hooks are deflected inwards until they reach the apertures 312. Finally the housing also has an aperture 314 for each holder, in one side wall or the other alternately for adjacent holders in each case. These apertures serve as catches for the locking of the holders.

The disc holders comprise in each case a platter-shaped, dished or troughed main member 316 and also a front wall unit 318, which is linked to the main member by way of a so-called "film link" or web 320. The dished bowl of the main member has three lugs 321 overlying it for holding-down a compact disc in the bowl. In the rear, outside the bowl, moulded into one corner of the main member there is a pedestal 322 which sits in a depression 324 of the main member, which depression in turn has two support projections 328 overlying it; in the vicinity of its base, the depression is cut out for reasons of injection-moulding technology. On the

pedestal 322 there fits the helix 330 of a leg-and-collar spring (a helical torsion spring with ends of the helix projecting); one arm 332 of which is fixed in an aperture in the main holder member while
5 the other arm 334 in the untensioned position (indicated by broken lines in Fig. 4) extends obliquely backwards.

The spring is thereby bent in such a way that the arm 334 is situated in the plane of the holder, and this is ensured by means of the support projections
10 328 co-operating with the base of the depression. The free end of the spring arm 334 is somewhat rounded. During assembly, this rounded-off portion enters the associated groove 306 in the housing, so that the holder is biased in the ejection direction, since the spring is
15 loaded (in this state the spring is shown by solid lines).

In the region of the dished bowl, the main holder member finally also has two apertures in which stand tongues 336 which can be resiliently deflected in the plane of the holder and the free ends of which are
20 angled upwards and turned inwards. The tongues fit with the angled portion 338 laterally against the disc 340 when the latter is pushed completely into the holder. The result is that when the holder is pushed out of the housing under the influence of the spring 330/334 the
25 disc is braked, so that it is not catapulted out, and

when the container is used in a motor vehicle,
vibration of the disc in the holder is damped. When
a disc is pushed in, the tongues also ensure that the
disc reliably reaches its end position, so that the
5 front wall unit can also then be hinged upwards and
the user is clearly aware of the braking force of the
tongues being overcome, so that he can be certain that
the disc 340 is securely stowed. The ends of the tongues
which are bent inwards at right-angles thereby engage
10 over the disc and ensure that the tongues cannot slip
underneath the disc.

In the centre of the film link 320 a leaf spring
341 which bridges the link is inserted into corresponding
apertures in the main member and in the front wall unit.
15 The leaf spring exerts on the front wall unit a bias in
the direction of its hinged-down position and at the
same time forms the stop to limit this opening movement.
In the region of the lateral ends of the film link, the
front wall unit also extends with two extensions 342
20 into corresponding cut-outs in the main member. When
the front wall unit is hinged down, these extensions
block the insertion of the holder by running up against
the front wall of the holder which is situated over it
in each case or, in the case of the topmost holder,
25 against the housing top panel. Without this precaution

it would be possible for the user to try to push the holder in by pressing on the free edge of the disc and the front wall unit, which would then hinge upwards, and could trap the fingers of the user. The blocking effect is indicated by dash/dotted lines in Fig. 9. The front wall unit extends the main member forwards, with both the depression extending into the front wall unit and the guide grooves continuing in the remaining thicker portion of the front wall unit. The contour of the depression is indicated by 344.

A very narrow end strip 346 of the leaf spring 341 is angled slightly upwards and projects beneath a feeler arm 348 on one end of a pivoted lever 350, the spindle of which is rotatably supported on the base of an elongated recess 352. The recess extends from the underside of the front wall unit parallel to the front wall over approximately half its width, and near the base of it there are narrowed portions 354, so that the lever spindle, once it has been snapped in during assembly, cannot fall out again. At the other end of the lever there extends an indicating arm 356, off-set by 180° with respect to the feeler arm.

The end face 358 of the arm 356 is coloured or provided with some other kind of marking which can be seen through a window 362 inserted in the front of the

end wall 360. If a disc is now inserted in the holder, its edge presses on the feeler arm 348 with the spring end strip 346 being deflected, and by means of this pivoting of the lever 350 the end face 358 mentioned
5 appears behind the window, thus signalling that the holder in question is occupied. In the other case the lever is rotated back into the other indicating position by means of the end strip 346.

Between the window and the housing side wall a
10 release button 364 extends through the front of the end wall 360 and is displaceable normal to the latter by finger pressure. It thereby presses on two wedges 366 moulded on to a lever or catch which is displaceable parallel to the front 360 and is biased by a spring arm
15 368, which is also moulded on, into the closed position shown in Fig. 4.

As can be seen in Fig. 7, the button is inserted from in front and the catch from below into the front wall unit; the extensions on the members which make it
20 possible for them to snap in during assembly/^{are}not shown in detail here.

Both the occupied indication means and the release button with corresponding catch are arranged alternately on the right and on the left, looking at the front 360,
25 for adjacent holders, in order to allow convenient

operation in spite of the relatively limited dimensions in the height direction.

Whilst the apparatus according to Figs. 4 to 9 has been shown and described in great detail, the embodiments according to Figs. 10 to 26 are substantially in diagrammatic form and their description is limited to their salient features.

Figs. 10 to 12 relate to an apparatus for storing compact discs. In a housing 400, slider members constructed as holders 402 are guided along rails 404 which are moulded on to the inside of the housing side walls and engage in corresponding lateral grooves in the holders. The ejector spring arrangement in this case is in the form of a leaf spring 406 and the ejection travel of the holders is limited by stop hooks 408 which engage in slots 410 in the housing sides and which, when the holder is pushed in during assembly, can spring out inwards, owing to apertures 412 situated behind. A front wall unit 414 is joined on to the main slider member by means of a film link or web 416 and is biased into the folded down position by two leg-and-collar springs 417. The front wall unit has at the side a guide 418, opening outwards, for a button 420, which is biased outwards by a helical spring 422 and secured against dropping out by means of a moulded-on stop 424. In the rest position (as shown) the sharp edge of a

wedge 426 moulded on to the button lies in front of a complementary oblique surface of a leaf spring 428 which is moulded out of the front wall unit, is part of the web situated above the guide groove and has

5 moulded on to the side facing towards the corresponding portion of the appropriate guide rail a hook 430 which engages in a corresponding aperture in the rail, which is indicated by 432. The helical spring 422 is inserted through an opening in the floor 434

10 and is held on pins 436 moulded on to the front wall unit, or 438 on the button.

The apparatus according to Figs. 13 and 14 serves for the storage of compact cassettes. In a housing member 450, a transport slider member 452 is guided

15 so that it can slide, and is biased in the ejection direction by a helical spring 454. The ejection travel is limited by means of the stops 456 which run in slots 458 in the floor of the housing member. The locking of the slider member is effected by means of a hook 460

20 which on the floor side is moulded on to a leaf spring 462 set out from the slider member floor and can be lifted out by a wedge 464 which forms part of a button 466. The button is also manufactured in one piece with the slider member by the injection-moulding method, but

25 in such a way that it is movable with respect to the

body of the slider member, being connected to the latter by way of resiliently deformable intermediate members 468. The intermediate/lie near the wedge in plan view (Fig. 14), and it can be seen
5 that the moulding die need not be very complicated.

In the embodiment according to Figs. 15 and 16, near the transport slider member for a compact disc which is guided in a straight line in the housing member 470 and is in the form of a platter-like holder
10 472 there is formed in the housing member a channel 474 in which a plunger 476 is displaceable, with a button 478. The inner end of the plunger, when pressure is exerted on the button, runs on to a wedge surface 480 of a catch 482 and thereby displaces the
15 latter at right-angles against the bias of a helical compression spring 484. The catch thereby comes free from an incision 486 in the holder 472, so that the latter can be pushed out by the leaf spring 488.

The embodiment according to Figs. 17 to 19 is
20 similar to that in Figs. 10 to 12, with the button 500 being guided in the front wall unit in an aperture 502 and secured against dropping out by means of a moulded-on stop 504. The button acts with its edges 506, 508 on corresponding wedge surfaces 510, 512 of a catch
25 514 which is displaceable at right-angles to the

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direction of movement of the button and is pressed by a helical spring 516 against a stop 518, and thereby lifts the catch out of a corresponding incision 520 in the housing side wall. The disc holder 522 can then be pushed out by a leaf spring 524, and the front wall unit 526 can tilt away under the influence of a leaf spring 528. The catch is inserted in a channel which is open at the bottom and then after insertion of the button - with the members being resiliently deformed so that the button can lock in - is held in its bearing. The spring 516 is secured against dropping out by an extension 530 of the catch. This type of construction of the locking system can be "turned" and installed on the other side of the holder, as indicated in Fig. 18; this facilitates actuation by the user, since in spite of the limited height of the individual slider members, each button is situated far enough away from the next one on the same side of the housing to avoid the accidental release of two slider members with one finger.

The embodiments according to Figs. 20 and 26 are again designed for compact cassettes.

In the alternative form according to Figs. 20 to 22, the frontal region of the slider member 540 is made double-walled, with the cavity 542 housing the coupling

element in the form of the catch 544 with helical bias springs 546 and button 548, the actuation side of which projects through an aperture in a cover plate 550 which is placed on the slider member and is, for example, attached by ultrasonic welding. The button has its own bias system, consisting of two small leaf springs 552 bent approximately into a V-shape. The catch engages by means of a projecting part 554 in a complementary part 556 in the housing member side wall 558 and - in a similar manner to Figs. 17 to 19 - is unlocked by way of its wedge surfaces when the button acts on the latter.

In the embodiment according to Figs. 23 to 26, the transport slider 574 is housed so that it can slide in a housing member 570 with moulded-on guide rails 572. Out of the slider member floor a leaf spring tongue 576 with moulded-on hooks 578 is cut, with the release wedge 582 of a button 584 engaging with its wedge surface 580. The button is housed in the double-walled front 586 of the slider member and guided therein; it can be inserted from below with the tongue 576 being deflected and the outer wall being resiliently deformed.

CLAIMS:

1. An apparatus for storing a recording medium, such as a magnetic tape cassette, a diskette, a record or a video disc, the apparatus comprising: a housing member, a transport slider member guided in the housing member, arranged to receive a recording medium, and movable from a storage position within the housing member into an outer removal position in which a recording medium placed in the transport slider member can readily be taken hold of by the user, a spring arrangement which biases the transport slider member into the outer removal position, and a locking arrangement which comprises elements mechanically engaging each other in the storage position of the transport slider member, which can be locked automatically when the transport slider member is pushed inwardly from its removal position, and which includes at least one catch element which is displaceable relative to one of the members being locked but is supported against displacement in the direction of movement of the slider member, wherein on one of the members, a release element for releasing the catch element is provided, which release element is so guided as to move substantially in the direction of insertion of the slider member, which release element



acts against a spring bias and which release element serves to unlock the catch element.

2. An apparatus according to Claim 1, wherein the travel of the release element is limited by means of stops and is greater than that required to unlock the catch element.

3. An apparatus according to Claim 1 or 2, wherein the catch element and the release element are both mounted on the transport slider member.

4. An apparatus according to any one of Claims 1 to 3, wherein several release elements are provided and act on a single catch element.

5. An apparatus according to any one of Claims 1 to 4, wherein the catch element is provided with a bias spring by means of which it is biased into the locking position.

6. An apparatus according to Claim 5, wherein the bias spring of the catch element also provides the spring bias for the release element.

7. An apparatus according to any one of Claims 1 to 6, wherein the mass of the release element and its bias spring force are such that accidental release due to inertia forces can occur only at a predetermined acceleration of the apparatus in the direction in which the slider member is pushed out.



* C L N S *

8. An apparatus according to Claim 1 for storing compact discs, wherein a plurality of transport slider members are provided, each transport slider member has a front wall unit which can be pivoted, with respect
5 to a main slider member, about an axis running at right-angles to the direction of movement of the main slider member, so that a disc, when it is in the removal position, can be grasped by the user, analogously to the way in which pincers grasp an object, on the opposite faces of the disc.

10 9. An apparatus according to Claim 8, wherein each disc is provided with its own transport slider member, which can be pushed so far out of the housing member that a section of the main slider member which is sufficient to act as an insertion guide member projects out of the housing
15 member.

10. An apparatus according to Claim 9, wherein on the main slider member there are arranged braking elements which, in use, come to rest against the edge of an inserted disc in the region of that half of the disc
20 which faces towards the front wall unit, the braking elements being arranged at a distance from each other which is smaller than the disc diameter, and being capable of being resiliently deflected away from each other in such a way that when a disc is pushed in they yield until they are at a distance from each
25 other equal to the disc diameter.



11. An apparatus according to Claim 8, wherein the bias spring arrangement for each transport slider member comprises a helical torsion spring, of which the helix and one projecting end are housed in the main slider member while the other projecting end is free and engages in an associated groove in the rear wall of the housing member, lying in a main slider plane.

12. An apparatus according to Claim 8 provided with an indicating device to show whether the transport slider member is empty or occupied, the indicating device comprising a pivotable feeler which, when the front wall unit is pivoted into the insertion position, comes to rest under spring bias against the surface of an inserted disc and thereby displaces an indicating element, wherein the feeler and the indicating element are constructed as arms of a two-armed lever which is rotatably supported in the front wall unit.

13. An apparatus according to Claim 12, wherein the front wall unit is biased, by means of a leaf spring arranged in the region of the axis of the front wall unit, into a position in which it is pivoted away from the main slider member, and wherein the leaf spring has an extension which provides the spring bias for the feeler.

14. An apparatus according to Claim 8, wherein the braking elements are moulded in one piece with the main



slider member and are made from injection-moulded plastics material.

15. An apparatus according to Claim 8, wherein the angle defined by an apex in the centre point of an
5 inserted disc and lines passing through the points of contact of the braking elements with the edge of the disc is less than 160° and greater than 90° .

16. An apparatus according to Claim 15, wherein the angle is approximately 140° .

10 17. An apparatus according to Claim 1, wherein the coupling element is constructed in one piece with one of the members and is resiliently displaceable relative thereto.

18. An apparatus according to Claim 1, wherein
15 the release element is constructed in one piece with one of the members and is connected thereto by way of resilient intermediate members.

19. An apparatus according to Claim 1, wherein the release element and the catch element are arranged in
20 the housing member.

20. An apparatus according to Claim 1, wherein the catch element and the release element are not a part of the housing member and transport slider member but are inserted into them.



21. An apparatus according to Claim 20, wherein each element has its own bias spring associated with it.

22. An apparatus according to Claim 21, wherein
5 metal bias springs are provided.

23. An apparatus according to Claim 21, wherein at least one of the bias springs is moulded in one piece with the corresponding element and injection-moulded from plastics material.

10 24. An apparatus according to Claim 20, wherein both of the elements have a common bias spring associated with them and the two elements are mechanically coupled to each other.

25. An apparatus according to Claim 1, wherein
15 one of the elements is made in one piece with one of the members from injection-moulded plastics material and the connection between the two is constructed as a bias spring for the element.

26. An apparatus according to Claim 25, wherein
20 the other element is not a part of the housing member or the transport slider member but is inserted into one of them.

27. An apparatus according to Claim 1, wherein the two elements are mechanically coupled with each other
25 by way of wedge guides.



28. An apparatus according to Claim 1, wherein the catch element is displaceable parallel to the principal plane of a recording medium being stored.

29. An apparatus according to Claim 1, wherein
5 the catch element is displaceable normal to the principal plane of a recording medium being stored.

30. An apparatus according to Claim 28, wherein the catch element is constructed and arranged to latch into a side wall of the housing member.

10 31. An apparatus according to Claim 28, wherein the catch element is constructed and arranged to latch into the transport slider member.

32. An apparatus according to Claim 29, wherein the catch element is constructed and arranged to latch into
15 a floor panel of the housing.

33. An apparatus according to Claim 29, wherein the transport slider member is guided along rails moulded on side walls of the housing member and wherein the catch element is constructed and arranged to latch into a guide
20 rail.

34. An apparatus according to Claim 33, wherein the guide rails engage in guide slots provided on the transport slider member and wherein the catch element is constructed as a cut-out tongue-shaped section of a web
25 bordering a guide slot.





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35. An apparatus according to Claim 1,
wherein in a common housing member a plurality of
transport slider members are housed so that they are
movable parallel to one another.

5 36. An apparatus according to Claim 35,
wherein the release elements are staggered with respect
to one another.

37. An apparatus according to Claim 36,
wherein the release elements are arranged alternately
10 near side walls of the housing member.

38. An apparatus for storing a recording medium, such as a magnetic tape cassette, a diskette, a record or a video disc, the apparatus being substantially as herein described with reference to, and
5 as illustrated by, Figures 1 and 2 of the accompanying drawings.

39. An apparatus for storing a recording medium, such as a magnetic tape cassette, a diskette, a record or a video disc, the apparatus being sub-
10 stantially as herein described with reference to, and as illustrated by, Figure 3 of the accompanying drawings.

40. An apparatus for storing a recording medium, such as a magnetic tape cassette, a diskette, a
15 record or a video disc, the apparatus being substantially as herein described with reference to, and as illustrated by, Figures 4 to 9 of the accompanying drawings.

41. An apparatus for storing a recording medium, such as a magnetic tape cassette, a diskette, a record or
20 a video disc, the apparatus being substantially as herein described with reference to, and as illustrated by, Figures 10 to 12 of the accompanying drawings.

42. An apparatus for storing a recording medium, such as a magnetic tape cassette, a diskette, a record or
25 a video disc, the apparatus being substantially as herein



described with reference to, and as illustrated by, Figures 13 and 14 of the accompanying drawings.

43. An apparatus for storing a recording medium, such as a magnetic tape cassette, a diskette, 5 a record or a video disc, the apparatus being substantially as herein described with reference to, and as illustrated by, Figures 15 and 16 of the accompanying drawings.

44. An apparatus for storing a recording 10 medium, such as a magnetic tape cassette, a diskette, a record or a video disc, the apparatus being substantially as herein described with reference to, and as illustrated by, Figures 17, 18 and 19 of the accompanying drawings.

45. An apparatus for storing a recording 15 medium, such as a magnetic tape cassette, a diskette, a record or a video disc, the apparatus being substantially as herein described with reference to, and as illustrated by, Figures 20 to 22 of the accompanying drawings.

46. An apparatus for storing a recording medium, 20 such as a magnetic tape cassette, a diskette, a record or a video disc, the apparatus being substantially as herein described with reference to, and as illustrated by, Figures 23 to 26 of the accompanying drawings.

