Background of the invention

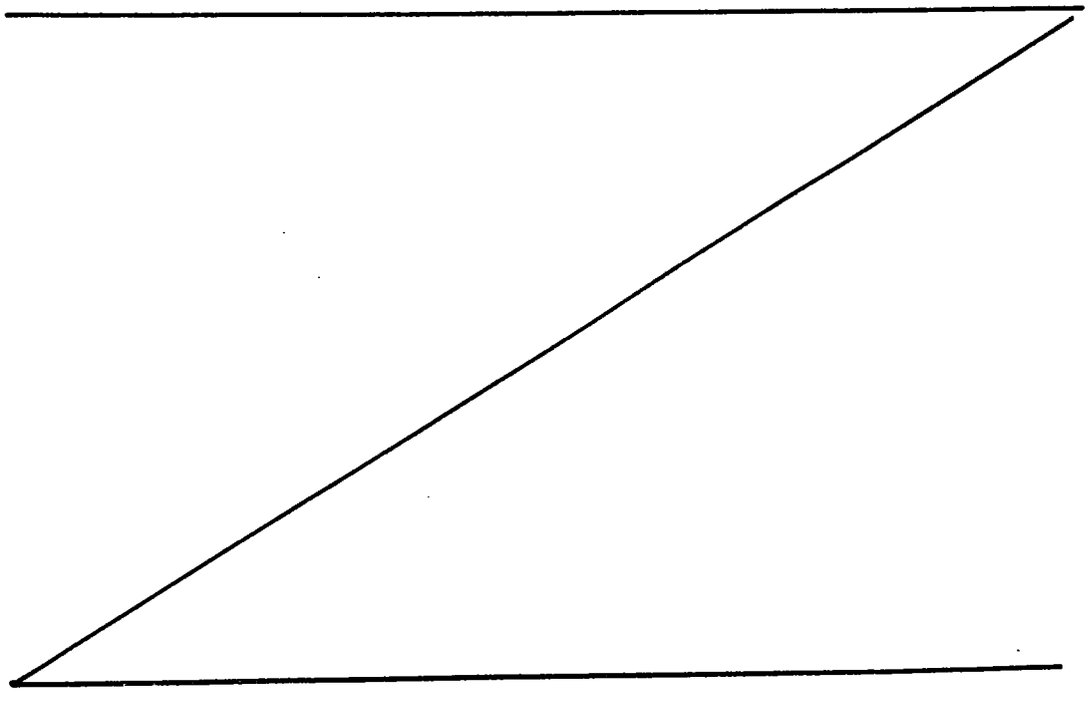
The present invention relates to a multi-part receptacle according to the preamble of claim 1.

In the case of a known multi-part receptacle of this kind (Au-B-25672/77), the individual receptacles or partial receptacles, being constituted by plastic pockets, are interconnected to a fanfold assembly or, to say it in other words, so that the upper marginal edge of a first receiving pocket is connected to the lower marginal edge of an adjacent receiving pocket, while the upper edge of the latter is connected, in its turn, to the lower edge of the next following pocket so that in the unfolded condition all receiving pockets present themselves as a continuous flat sheet, separated only be folds.

Further, there have been known multi-part receptacles comprising flat cases or receiving pockets (EP-A 112 966; DE-U 8515950; US-A 4 538 730) which are firmly connected at their lower ends, across all pockets, by suitable hinge means, while their other ends can be opened or pulled apart in the form of of a rosette, in the manner one would open a folded Chinese lantern, whereby downwardly tapering pockets, arranged along an arc of a circle, can be created. However, a receptacle of this type is connected with the disadvantage that it is more or less suited only for accommodating very thin objects, such as sheets of paper, or the like, since in their open condition the individual pockets taper strongly toward the bottom, while in their closed condition the

individual pockets are compressed to the thickness determined by the lower joined end. Receptacles of this kind do not easily lend themselves for receiving, storing safely and giving easy access to plate-shaped objects, as for example known sound or data carriers, such as CD disks or diskettes.

It is also possible to arrange certain plate- or disk-shaped items, such as the above-mentioned computer diskettes, in stacks and to store them in this manner; however if the user then desires to select a given diskette for use, conventional storage possibilities require that the entire stack of available diskettes be leafed through by hand, i.e. each individual container in which a diskette is stored must be physically manipulated and turned over. This is disadvantageous and cumbersome and, in particular, does not represent an optimum form of storage for small plate- or disk-shaped items.



It is therefore the object of the present invention to create a multisectional storage container, such as a storage box for plate- or disk-shaped, i.e. flat, items of the type that are in widespread use in the form of so-called compact disks or diskettes, for example, with which these items can be stored and kept in an optimum and proper manner, while nevertheless permitting the entire storage system to be prepared, by means of a simple manipulation, in such a manner as to provide direct access to a specific item which is stored therein and, in its special embodiment affords immediate identification, by means of a visual labelling area, for example, without the need for having to additionally leaf through the items.

Advantages of the Invention

The present invention solves this object by means of the characterizing features of claim 1 and offers the advantage, by means of the storage system according to the present invention, of permitting plate- or disk-shaped items, i.e. compact disks or diskettes, in particular, to be handled easily and, in addition, to be readily available, even if they are still contained in a protective housing, whereby all of the items that have been stored and kept can be immediately identified merely by opening the multisectional storage container according to the present invention, i.e. by extending it apart. This is accomplished in that the individual sleeves have cutouts or openings in at least those areas in which the plate- or disk-shaped items that are contained therein are provided with lettering, symbols or other visual identification means. Consequently, a user is able to immediately view all labelling areas of diskettes, for example, with the desired diskette then being available immediately for removal.

The thickness of the storage box or storage system that is thus formed amounts to only little more than the thickness of the plate- or disk-shaped items that are stored therein, which, for the sake of simplicity, will hereinafter merely be termed diskettes, although it should be understood that this term "diskette", which will be used throughout hereinafter, shall not be deemed to in any way limit or restrict the scope of the present invention and that the present invention is therefore also suitable for storing, keeping and providing expedient access to any desired types of plate- or disk-shaped items. The storage system according to the present invention is especially well suited for storage of smaller diskettes, 3-1/2" or 3" diskettes, for example, although in principle, of course, larger data or audio media can also be stored, such as 5-1/4" or 8" diskettes, for example. These dimensions, also are given merely by way of example and should not be understood as being in any way restrictive.

In the case of these kinds of diskettes, as well as compact disks, it is customary for the magnetic, disk-shaped medium or the compact disk, with its extremely fine markings that are scanned by laser light, to be enveloped in a (plastic) enclosure in order to thus largely afford them protection against damage. Moreover, the read slot can also be covered by means of suitable means, such as a slide, for example, in order to prevent damage to the data or audio medium, even in the event of improper handling (such as fingerprints, for example). Data media with additional envelopes or protective enclosures of this type are particularly well suited for the storage system according to the present invention, although the present invention can not only be employed as a storage system in the field of data processing, but in the field of entertainment electronics (audio and video), as well.

And, finally, it is especially advantageous to effect the connection of the individual sleeves of the container that produce a one-piece storage container by means of interconnecting means, each of which is articulated to the two adjacent sleeves in such a manner that, when the multisectional storage container is opened, all sleeves are drawn apart in the kind of a parallelogram guide, yet remain in the same plane, while merely assuming an oblique attitude, which is desired by the user, and freeing them for visual inspection or manual access to the stored diskette (in its protective enclosure).

Further embodiments and enhancements of the present invention are the subject of the subclaims, in which they are set forth. Especially advantageous here is the possibility of being able to fabricate a multisectional storage container completely in one piece by means of a uniform injection moulding process, with each of the connecting means being attached to the adjacent storage sleeves by means of articulated, one-piece film hinges. The arrangement of the individual sleeves, with the accompanying one-piece joints and the connecting members or transitional surfaces, can be effected in such a manner as to permit the complete component to be injection moulded in one piece from plastic, without the need for lateral slides or similar elements which would increase cost and complicate the fabrication process. When the storage box which has been fabricated in this manner is closed, the elastic film hinges then serve as spring elements, so that the individual storage sleeves then automatically extend apart when a complementary slide-over cover hood is removed. Fabrication of a storage box of this type is especially cost-efficient.

Moreover, in a further practical example of the present invention, it can be favorable for front and rear partial cover hoods to be disposed directly on the last storage sleeve or on a last connecting member in such a member as to produce a completely enclosed, one-piece unit by means of precisely this surrounding enclosure when the storage container is pushed together and collapsed.

Drawings

Practical examples are shown in the accompanying drawings and will become more apparent from the following description, in which

Figures 1 to 5 show a first embodiment having dual intermediate connecting means attached in an articulated manner in such a way as to permit this storage box to be opened and closed in a manner similar to a parallelogram, whereby

Figure 1 shows a side view of the individual sleeves that form the storage container, with connecting means, a portion thereof in a cross-sectional representation, and

Figure 2 shows a top view of one of the sleeves that form the multisectional storage container, taken along line II-II of the cross-sectional representation in Figure 1, and

Figure 3 shows a partial section, on a larger scale, of the area of the articulated mounting means of the intermediate connecting means taken along line III-III in Figure 2, with a section taken along line I-I being shown additionally in Figure 2, which corresponds to the partial sectional area in Figure 1, and

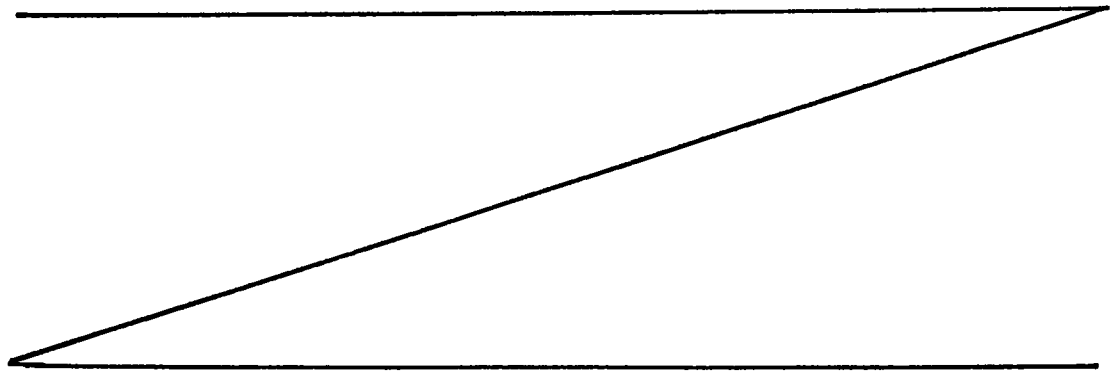
Figure 4 shows a partial sectional representation similar to the representation shown in Figure 3, however with the individual sleeves in the collapsed state, and

Figure 5 shows a lateral representation of all of the individual sleeves that form the multisectional storage container as a whole, in a form that is suitable for storage purposes, i.e. collapsed or folded together and supplemented by a cover hood which is slid thereover;

Figures 6 and 7 show a further practical example of the present invention also having a parallelogram-like movement, which is fabricated in one piece by means of an injection moulding method, in which namely

Figure 6 shows a lateral sectional representation taken along line VI-VI in Figure 7 - the representation is not drawn to perspective -, in which the individual sleeves are also interconnected one with the other in the nature of a parallelogram opening mechanism, and

Figure 7 shows a top view of one of the sleeves, for example taken along sectional line VII-VII in Figure 6;



Description of Practical Examples

The underlying concept of the present invention is to create a multisectional storage container for any type of plate-shaped items, which can also display a substantial thickness, and in which individual storage sleeves for these items, which will be termed diskettes hereinafter, are formed which are interconnected one with the other in an articulated manner in such a way that they are spaced equidistantly at all points one from the other when the storage container is opened, while nevertheless remaining in the plane of the opening direction, i.e. they do not fold out radially about a common fulcrum.

In the practical first example shown in Figures 1 - 5, in which the individual sleeves possess a parallelogram interconnecting mechanism, the multisectional storage container 40 comprises a given, yet freely selectable number of individual sleeves 1 for holding the plate- or disk-shaped items or diskettes 41. Sleeves 1 are interconnected one with the other in an articulated manner by means of interconnecting means 2; in the embodiment shown in Figure 1, which is based upon a parallelogram mechanism, this is accomplished by means of an upper hinge joint 2a and a lower hinge joint 2b for each sleeve. Since both upper and lower hinge joints 2a and 2b are connected in an articulated manner where they abut the sleeves 1 to which they are associated, i.e. the adjacent storage sleeve (front and rear storage sleeves 1a and 1b), the upper and lower hinge joints can be collapsed on both sides in the direction of the associated sleeves, as shown by arrows A and A', as well as B and B'; consequently, the basic function of the present invention, demonstrated here by the practical example which is shown in Figure 1, produces a basic

function in which, when the sleeves in their entirety are moved in the direction of double-headed arrows C, the individual sleeves can be either extended apart from one another in the form of an accordian by means of the parallelogram mechanism that is ensured by upper and lower hinge joints 2a, 2b or collapsed together in such a manner that they are then arranged one against the other without any clearance therebetween and in a superimposed manner.

Through the employment of any desired number of sleeves, it is therefore possible to form storage systems, i.e. multisectional storage containers, in this manner which offer differing storage capacities, for example five-sleeve and ten-sleeve storage boxes, whereby, since all sleeves and all interconnecting means are of identical design, only one injection moulding tool is required in each case if the storage system, as a whole, is fabricated of a suitable plastic, for example. The individual hinge joints are then produced by means of catches and/or snaps.

It is obvious, and this shall apply with respect to the following practical examples, that plastic is a preferred material for the fabrication of the embodiments of a storage system according to the present invention, so that the individual components can be produced by means of injection moulding methods or fabrication in specific moulds - however it would also be within the scope of the present invention to fabricate the individual components of films or of a suitable cardboard material, by stamping material from a reel and appropriately folding and bonding or welding the components one with the other, for example, whereby it will not be necessary to discuss this aspect in greater detail, as the following detailed explanations of the practical examples of the present invention can be implemented equally well if they are fabricated of cardboard, of plastic films or of similar materials.

Each individual sleeve 1 comprises a panel-shaped back 41 which is completely surrounded on the sides and at the bottom by a raised edge, preferably in a one-piece manner, having the configuration of a U-shaped rib, with the bottom leg 43 of the U serving as the bottom stop for the data medium that is inserted therein (diskette 41) and the two side legs 44a, 44b (cf. Figure 2) serving to fix and guide the diskette laterally and moreover providing the means for arrangement of the hinge fulcrums and articulation areas for the interconnecting means. Upper and lower hinge joints 2a, 2b are always snapped into side members 44a, 44b of the respective sleeve, thus permitting them to be assembled in an especially simple manner.

Each upper and lower hinge joint 2a, 2b (whose design is identical) includes a transverse connecting panel 3, whose ends, aligned along the U-shaped edging of each sleeve 1, form a transition into ribs 4, which are disposed perpendicular thereto. It is these ribs 4, whose own ends then form the fulcrums 5 for articulated storage in conjunction with each adjacent sleeve; in the practical example that is shown in Figure 1, with front sleeve 1a and rear sleeve 1b. These articulated fulcrums can be designed in such a manner that pivot pins 5 protrude in one piece from the ends of each rib, which can have an unillustrated central slot 5a forming recesses on the sleeve for counter-support for engagement of the pins therein so that pivot pins 5 engage in a mutually resilient manner and subsequently catch in the counter-support of the sleeve. In order to allow the parallelogram guide mechanism that is formed in this manner to be effective when the individual sleeves are uniformly extended apart one from the other, it is necessary for each of the respective interconnecting means, i.e. upper and lower hinge joints 2a, 2b, to be pivotally engaged at a different vertical position on each front sleeve than on the lower sleeve, which is readily understandable, so that, when extended apart one from the

other, the sleeves that were in a directly contacting relationship one with the other while in the diskette box formed in this manner will assume the oblique attitude one relative to the other that is shown in Figure 1 or Figure 3 and can simultaneously thus be opened equidistantly one from the other in such a manner as to permit visual inspection and/or removal of the diskette stored therein. In order to allow the sleeves to be in a directly contacting relationship one with the other while in the collapsed state, lateral ribs 4 of hinge joints 2a, 2b nest in appropriate recesses 6 in the edge of the sleeve and transverse connecting panels 3 nest in recesses 7 (cf. Figure 3). The recesses, each formed toward the front and back by means of an oblique central wall or partition 6a, narrow in a tapering manner from the respective fulcrum so that, in the collapsed state shown in Figure 4, about one half of each rib 4 nests in recess 6 of the adjacent front sleeve and one half in recess 6 of the adjacent rear sleeve. Of course, while other solutions would naturally be conceivable here, the illustrated distribution is advantageous because it is necessary for each hinge joint to form a fulcrum with the respective front sleeve and with the respective rear sleeve.

It is obvious that the respective hinge joints could also form the fulcrums for the parallelogram guidance mechanism by means of appropriate lateral pins or similar pivotal elements, which would then have to be inserted separately.

A storage box of this type can be opened far enough until the upper and lower edges 4a of ribs 4 are in a contacting relationship with stop surfaces 4b which are formed by transverse webs of the lateral edges of the sleeve which are located at a distance therefrom in the closed state, as can best be seen at 4c in Figure 3. Through the oblique positioning of the hinge joints with their connecting panels 3 when in the open state, the labelling areas 9 of

stored diskettes 41 can be viewed immediately, thereby permitting a selected diskette to then be simply withdrawn upwardly. With the exception of the transverse connecting panels of the hinge joints, sleeves 1 are completely open to the front, i.e. as viewed from the left in the plane of the drawings in Figures 1 and 3 - However when the diskette box is open, the lower edge 11 of transverse connecting panel 3 serves to limit forward movement of the diskette, while when the storage box is closed, entire transverse connecting panel 3 and, of course, panel-shaped back 42 of the respectively adjacent sleeve in front form the forward restriction for the diskette that is inserted therein. In order to allow the respective diskette to be withdrawn easily when the storage box is in the open state, the panel-shaped back can also have a cutout of suitable configuration, extending obliquely downward and then upward again, as shown at 42a, for example.

As a result of inclined transverse connecting panel 3 of the respective upper hinge joint 2a of each sleeve when the storage is in the open state, inclined transverse connecting panel 3 facilitates the insertion of the respective diskette, as it is merely necessary for it to be placed in the V-shaped opening that is formed by the respective transverse connecting panel and the sleeve, whereupon the diskette will then slide into the correct position by itself.

As can best be seen from the representation that is shown in Figure 3, the hinge joints of the interconnecting means are (of necessity) missing on front sleeve 1a; consequently, a front panel 12 is disposed in order to prevent the diskette that is stored in this sleeve from falling out; front panel 12 is inserted permanently in the two free fulcrum recesses by means of suitable snap connectors 13.

In a preferred embodiment of the present invention, this front panel can, as shown at 14 in Figure 5, also have a catch nose which latches in a recess 15 of a cover hood 16 which is also disposed, so that the storage box which is thus formed is held together and remains closed in a dust-tight manner for transport, for example. The dust-tight seal is produced by the U-shaped edge of the panel-shaped back of each sleeve, whose periphery is enclosed.

The practical example that is shown in Figures 6 and 7 is similar to the storage box that is shown in the practical example in Figures 1 - 5 with respect to the parallelogram mechanism of the thusly interconnected sleeves; what is different, however, is that, while the design of the individual sleeves is otherwise identical - with the exception of the design of the hinge joint fulcrums - the fulcrums have been shifted here from the edges of each sleeve to the front and rear main surfaces thereof.

In this practical example, the storage box can be advantageously fabricated in one piece by means of a suitable injection moulding process, with sleeves 20 being designed in such a manner that they have a back panel 20a with an access cutout 20b and are at least partially edged by lateral and bottom retaining means for the plate- or disk-shaped item that is to be placed therein, i.e. for diskette 41, as a preferred embodiment of the present invention. As shown by the representation in Figure 7, tongue-like interconnecting means extend from back panel 20a of each sleeve 20; in the special practical example that is shown in Figures 6 and 7, these tongue-like interconnecting means comprise hinge joints 21a, 21b, which are disposed at the top left and right respectively on the back of the sleeve, as well as a third hinge joint 22 which is seated centrally in the bottom part. As can be seen at 23, hinge joints 21a, 21b and 22 are comprised of

thinner material at the areas of articulation, thus producing film hinges of the plastic material of the hinge joints, which permit the storage sleeves for the diskettes to be fully collapsed and placed in a directly contacting relationship one with the other here, too, in that these film hinges form either a complete bend or extend in a straight line to implement the parallelogram guidance and fixation of the individual sleeves one relative to the other, with the respective thicker intermediate portions of the hinge joints nesting in corresponding recesses in the front and back of the sleeves.

It is obvious that the other side of each of the film hinges that are disposed at the top left and right and at the bottom center of each sleeve form film hinges with the front of the then adjacent rear sleeve in locations on the back which are vertically staggered relative to the first hinges - downwardly in the case of this embodiment - so that articulations result either at the bottom edge of the front of each sleeve or at a central transverse surface that connects the side members. Here, too, when the individual sleeves are extended apart from the closed state in the direction of double-headed arrow C, the upper viewing and grasping areas of each sleeve, in particular, also open, thereby permitting trouble-free visual inspection and selection, as well as manual access.

The representation in Figure 6 shows the embodiment of a single-piece storage box of this type with parallelogram mechanism in the form in which it was injection moulded - It is therefore possible for the entire part to be fabricated in one piece from plastic, without the need for lateral slides, for example, which would make the injection moulding tool more expensive and complicated.

Since the film hinges serve as spring elements at fulcrums 23, the sleeves automatically separate when the cover hood, which has already been mentioned in conjunction with Figure 5 and which can also be employed here, is removed. Similarly,they can also be readily collapsed again by pressing against the front and rear sides.

In a preferred embodiment partial enclosure covers can also be coupled to the last connecting articulation member and to the first sleeve, respectively; taken together these partial enclosure covers form a complete, dust-tight enclosure.

To open a storage box it is practical to actuate catch noses which are disposed on the enclosure, thereby permitting the front portion to be swung downward and the storage box to be opened by pulling on the partial enclosure covers.



Claims

1. A multi-part receptacle, in particular an archiving box for plate-shaped objects such as storage media in the form of sound or data carriers (compact discs, floppy discs (41)), a separate receiving pocket (1, 1a, 1b, 20) being formed for each plate-shaped object, which may still be accommodated in its own protective casing, and each receiving pocket being flexibly connected to the directly adjacent receiving pocket(s) via intermediate connecting means, so that the sequence of the interconnected receiving pockets can be opened by pulling them apart, characterised in that, on each side facing an adjacent receiving pocket, each receiving pocket (1, 1a, 1b; 20) is connected in the manner of a parallel-motion device to the adjacent receiving pocket(s) (1, 1a, 1b; 20) by at least two hinge connections (2a, 2b; 21a, 21b, 22) which are offset vertically at a distance from one another and which form the intermediate connecting means.

2. A multi-part receptacle according to Claim 1, characterised in that each individual receiving pocket consists of an upper rear plate (42) with a handle recess (42a) and U-shaped edging at the sides and at the bottom and in that the respective upper and lower hinge connections (2a, 2b) each extend with a transverse connecting plate (3) in the transverse direction to respective adjacent front

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and rear sides of the receiving pockets, and have ribs which are attached to the sides and form the upper and lower hinge points in conjunction with lateral arms (44a, 44b) of the U-shaped edging located on both sides.

3. A multi-part receptacle according to Claim 2, characterised in that the points of rotation of the hinge connections (2a, 2b) are each formed by pivots (5) which project from the lateral ribs (4) of the hinge connections and engage in corresponding bearing recesses of the lateral rear edging.

4. A multi-part receptacle according to Claim 3, characterised in that, as a result of a central groove (5a) for insertion into the bearing recesses, the shape of the pivots is such that they can be locked by compression and subsequent expansion.

5. A multi-part receptacle according to any one of Claims 1 to 4, characterised in that the ribs (4) and the transverse connecting plates (3) of the upper and lower hinge connection (2a, 2b) of the parallel-motion device dip into receiving recesses (6, 7) of at least one adjacent receiving pocket.

6. A multi-part receptacle according to Claim 5, characterised in that each receiving pocket has the receiving recesses (6, 7) on its front and its rear side in the region of the U-shaped edging (44a, 44b, 43), i.e. on both sides, at the front and the rear, in such a manner that the transverse connecting plate (3) and the lateral ribs of the hinge connections (2a, 2b) each dip in even proportions into these receiving recesses of the respective front or rear adjacent receiving pocket.

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7. A multi-part receptacle according to any one of Claims 1 to 6, characterised in that the upper hinge connection (2a) and the respective following receiving pocket form a V-shaped receiving and insertion slit for a plate-shaped object, which at the same time allows optical examination and identification of the plate-shaped objects (floppy discs 41) inserted in the archiving box formed in this manner.

8. A multi-part receptacle according to any one of Claims 1 to 8, characterised in that, in order to limit the extent to which the individual receiving pockets can be pulled apart under parallel motion, limit stops of lateral rib-end-parts are formed on associated stop faces in the region of the respective hinge points of rotation.

9. A multi-part receptacle according to any one of Claims 1 to 8, characterised in that a covering hood (16) is provided which in the closed state receives all the receiving pockets forming the archiving box, provides covering, at least in the upper region, and is preferably open towards the bottom.

10. A multi-part receptacle according to Claim 9, characterised in that the covering hood (16) can be locked with at least one of the adjacent pockets.

11. A multi-part receptacle according to Claim 1, characterised in that the intermediate connecting means are formed as hinge connections (21a, 21b; 22) connected to the pockets so as to be in one piece therewith and forming hinges in the form of film hinges (23) at the respective connecting points.

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12. A multi-part receptacle according to Claim 11, characterised in that the one-piece hinge connections (21a, 21b, 22) each extend from the main front and rear faces of each pocket (20) held in the assembly and have thin material webs in the hinge regions for forming the film hinges.

13. A multi-part receptacle according to Claim 11 or 12, characterised in that two hinge connections (21a, 21b) are provided at the top left and top right of the rear side of each pocket and a central one is provided in the lower region, which, each offset vertically on the following front side of the next receiving pocket, are likewise connected to the latter so as to be in one piece therewith, so that the entire archiving box formed in this manner can be manufactured as a one-piece injection moulded part.