A cartridge storage case includes: a first cartridge storage case having a substantially rectangular shape, including a first projection, a first recess and a first divided compartment holding a group of cartridges; a second cartridge storage case having a substantially rectangular shape, including a second projection, a second recess and a second divided compartment having a substantially identical shape with the first divided compartment; and a hinge connecting a side of the first cartridge storage case with a side of the second cartridge storage case being opposite to the side of the first cartridge storage case, wherein the first and second cartridge storage case comprise an elongated handle through hole, respectively, which is provided in a side location which is opposite to a side where the hinge is provided in the first and second cartridge storage case.
CARTRIDGE STORAGE CASE

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention relates to a cartridge storage case which stores therein a flat-shaped cartridge which incorporates therein a reel round which a magnetic tape is wound, and more particularly to a technique which prevents an easy separation of an upper case and a lower case which make up the cartridge storage case.

[0003] 2. Background Art

[0004] In a conventional multipack of one-reel type magnetic recording tape cartridges, as is shown in FIG. 6, cartridges 1 were stored in cases 3 on a one-cartridge-in-one-case basis, and a plurality of cases 3 were then put together to be packed in a corrugated box 5, so as to secure cushioning properties.

[0005] In the case of the multipack like this, however, since the cartridges 1 were stored within the corrugated box 5, the corrugated box 5 needed to be opened to confirm whether or not the cartridges 1 were actually stored or which type of cartridges 1 were stored therein, causing a problem with convenience. In addition, with the cartridges 1 packed in the corrugated box 5, when it was submerged, the corrugated box 5 was soaked and saturated with water, having to encounter a problem that the corrugated box 5 failed.

[0006] In view of these situations, a case 7 as shown in FIG. 7 was developed to be disclosed in LTO-Ultrium L-pack, (online), TDK Co., Ltd., retrieved on Nov. 14, 2005, Internet, (URL: http://www.tdk.com/professional/lto/lto-pack.html) and to be marketed in which the case strength was not damaged even though the case 7 was wet with water and a multipack of cartridges 1 was enabled by a transparent plastic which allowed the contents therein to be seen from the outside.

[0007] However, the case described in the non-patent document No. 1 was such that storage spaces 9 for storing cartridges 1 individually were defined by a plurality of partitioning projections, so that the cartridges 1 were kept in the storage spaces 9 so defined on a one-cartridge-in-one-storage-space basis. Namely, cartridges were stored in a separated fashion. Because of this, in actual cartridge storage work, cartridges 1 needed to be stored one by one, and in particular, when there were a large number of cartridges 1 to be stored, a problem was caused that the handling efficiency of those cartridges 1 was deteriorated. In addition, in the case 7, since the storing spaces 9 were defined one by one, the whole of a storing area of the case 7 (that is, an upper opening area of the case 7) was equally divided by the individual storing spaces 9. Because of this, loads of substantially all of the stored cartridges 1 tended to be concentrated on terminating end portions 13, 15 of side walls of the case 7 which constitute corner portions thereof, and the concentration of the loads in such a way deteriorated the resistance to impact of the case 7, leading to a problem that the impact absorbing capability of the case 7 at the time it dropped was reduced.

[0008] In view of these situations, the applicant of the subject patent application developed before a cartridge storage case which could increase the cartridge storing work efficiency while maintaining the resistance to impact.

[0009] FIGS. 8 to 10 being drawings which explain a cartridge storage case according to a preceding invention based on which the present invention was made, FIG. 8 is an exploded perspective view which shows an upper case and a lower case in a separated state, FIGS. 9A and 9B show explanatory drawings of the upper case, in which FIG. 9A is a plan view of the upper case, and FIG. 9B is a side view of the same case, and FIGS. 10A and 10B show explanatory drawings of the cartridge storage case, in which FIG. 10A is a view as shown in a direction A in FIG. 9A, and FIG. 10B is an external view of a main part of the cartridge storage case which shows impact-absorbing ribs provided on an external wall surfaces of a divided compartment of the cartridge storage case.

[0010] A cartridge storage case 100 can preferably be used to store, for example, flat-shaped cartridges 21 which each incorporate therein a reel round which a magnetic tape is wound.

[0011] The cartridge 21 incorporates therein the magnetic tape wound reel in such a way that an axis of the reel is aligned in a thickness direction of the cartridge. In this embodiment, while the cartridge 21 will be described as being formed into the shape of a square flat body, the cartridge may additionally be formed into the shape of a rectangular flat body.

[0012] The cartridge case 100 is made to be closed in an openable fashion by bringing an upper case 23 and a lower case 25, which are constructed identically, into a face-to-face superposed state for engagement with each other. A plurality of divided compartments 27 are designed to be formed in an interior of the cartridge storage case 100 by bringing the upper case 23 and the lower case 25 into engagement with each other. In the case of this embodiment, four divided compartments 27 are formed. A group of cartridges 29, which is formed into a block-like shape by arranging a plurality of cartridges 21 in parallel in a thickness direction thereof as shown in FIG. 8, is made to be held in each divided compartment 27. Note that the cartridges 21 are disposed, as shown in FIG. 8, in such an orientation that tape exposure openings, where the strength is reduced, are disposed upwards so that the tape exposure openings lie in a central part of the divided compartment 27. The cartridges 21 may be more preferably disposed in such a way that the tape exposure openings of the cartridges in one of the divided compartments 27 face to the tape exposure openings of the cartridges in the adjacent divided compartment. In this case, the tape exposure openings of the cartridges in the respective divided compartments 27 are oriented towards an inward central part of the cartridge storage case, whereby the tape exposure openings can be protected against an impact applied from the outside of the case.

[0013] Here, one divided compartment 27 is formed to have substantially the same storage space as the volume of the group of cartridges 29 which is made up of five cartridges 21. Consequently, since there is provided no partitioning wall for each cartridge 21 in each divided compartment 27, even though cartridges 21 are packed in the divided compartment 27 with no care, they can be stored in the compartment easily. For example, a few cartridges 21 can be grasped together to be packed in the divided compartment 27, and hence, the cartridge storing work efficiency is improved remarkably compared to the conventional procedure in which cartridges are picked up one by one to be packed in the storage space.

[0014] Thus, assuming that the storage area for a single cartridge is the same, with the collective storage of the
plurality of cartridges 21 which are formed into a block, an extra area which does not contribute to the storage of cartridges can be secured, when compared to the case where the plurality of cartridges 21 are stored in the individually separated fashion. In the cartridge storage case 100, portions produced as the extra space are made use of as an impact absorbing portion (a so-called crushable zone).

[0015] Namely, flanges 31, 31 are provided on both end sides of the upper case 23 and the lower case 25 in an axial direction of the magnetic tape wound reel in such a manner as to extend therefrom as an impact absorbing portion. A handle opening 33 is opened in each flange 31 which functions as a handle when the case is carried. Namely, the cartridge storage case 100, which is completed by bringing the upper case 23 and the lower case 25 into engagement with each other, is made to be carried vertically by gripping on one of the flanges 31 by the hand which is passed through one of the handle openings 33, 33, respectively.

[0016] When the cartridge storage case 100 is carried vertically, as described above, by gripping on one of the flanges 31 by the hand which is passed through the handle opening 33 in the relevant flange 31 with the other flange 31 being placed downwards, should the cartridge storage case 100 slip off the hand, the cartridge storage case 100 will fall to hit the ground violently. As this occurs, the flange 31, which functions as the impact absorbing portion, is deformed because of loads of the cartridge storage case 100 and the groups of cartridges 29, and the impact energy is absorbed by virtue of the deformation of the flange 31, whereby an impact applied to the cartridges 21 stored in the case is designed to be mitigated.

[0017] In general, the cartridge 21 tends to be easily damaged by an impact applied in the axial direction of the reel. This is because there may occur a case where a tape projection is produced on an end face of the wound tape, and in case the end of the wound tape collides against a reel flange at the projection so produced, whereby the tape is collapsed or bent, the smooth taking up and feeding of the magnetic tape is interrupted, and in the worst case, reading and writing are disabled. In this embodiment, by providing the flanges 31 which function as the impact absorbing portions in the axial direction of the reel of the cartridge 21, the resistance to impact in the axial direction of the reel is made to be increased which is weak against impact.

[0018] FIG. 10(b) is an external view of a main part of the cartridge storage case which shows impact-absorbing ribs 35 which protrude outwards from the divided compartment 27. Consequently, even in the event that an object is brought into collision with the cartridge storage case 100 from the opposite side, where the flange 31 and the cartridge 21 stored therein by the impact-absorbing ribs 35, whereby the resistance to impact is designed to be increased due to the impact-absorbing ribs 35 functioning as a cushion material.

[0019] The cartridge storage case 100 is made up of the upper case 23 and the lower case 25, which are constructed identically and on each of which a raised portion (a projection) 41 and a recessed portion (a recess) 43 are provided in such a manner as to be brought into engagement with their mating recessed and raised portions. In this embodiment, as shown in FIG. 9(a), the elongated projection 41 and the recessed groove 43 are formed around a circumference of the upper case 23 which surrounds the four divided compartments 27 in such a manner as to be vertically symmetrical with each other relative to a center line 45 of the upper case 23. Namely, on the upper case 23 and the lower case 25, the elongated projection 41 is continuously formed into a U-shape on one side and the recessed groove 43 is formed continuously into a U-shape on the other side of the case across the center line 45.

[0020] When the upper case 23 and the lower case 25, which are constructed identically, are combined together vertically, the elongated projections 41 enter the recessed grooves 43, respectively, for engagement with each other, whereby the divided compartments 27 are closed tightly, so that the cartridge storage case 100 can not only obtain the resistance to water but also float in the water. In addition, the cartridge storage case 100 can protect the cartridges 21 stored therein against dust, moisture, splashed water, and other hazardous substances. Namely, the single case can be used as contents as well as a lid. Thus, the cartridge storage case 100 which can be opened and closed by the elongated projections 41 and the recessed grooves 43 and in which the divided compartments 27 are formed is made up of the case of one type that is molded from a single mold.

[0021] In addition, a partitioning portion 47 is provided between the adjacent divided compartments 27. This partitioning portion is formed into a shape and with a thickness, which will be described later on, which facilitate its deformation when an impact is applied. Namely, when the cartridge storage case 100 is dropped to hit the ground, an impact generated then is mitigated by virtue of the deformation of the partitioning portion 47. The partitioning portion 47 is interposed between the divided compartments 27 vertically and horizontally, so as to deal with the crash of the cartridge storage case 100 in both directions: from a side where the flange 31 is provided and a side which is 90° apart from the side. In this embodiment, the partitioning portions 47 are formed into the shape of a cross in such a way as to partition the interior of the cartridge storage case 100 into the four equally divided compartments 27.

[0022] In this cartridge storage case 100, since the partitioning portions 47 are interposed between the divided compartments 27 in which groups of cartridges 29 are stored individually, even in the event that an impact is applied to each of the groups of cartridges 29, for example, due to the cartridge storage case 100 falling to hit the ground, the partitioning portions 47 absorb the impacts, so that an impact force due to the inertia of the group of cartridges 29 is prevented from affecting the adjacent groups of cartridges 29.

[0023] Incidentally, the cartridge storage case 100 in which the groups of cartridges 29 are stored is stored in a corrugated box, not shown, which has an interior shape which is substantially the same as an exterior shape of the cartridge storage case 100. Because of this, in order to improve the ease with which the cartridge storage case 100 is taken out of the corrugated box, a chamfered portion 49 which constitutes a sloping edge which is inclined about 45° relative to the flange 31, is provided at both ends of each flange 31, whereby the cartridge storage case 100 forms, when it is stored in the corrugated box, triangle holes between the chamfered portions 49 and an interior wall surface of the corrugated box, so that the fingers of the hands...
of the user can be inserted into the triangle holes so formed to easily take the stored cartridge storage case 100 out of the corrugated box.

Furthermore, although not shown, the chamfered portion 49 may be configured so as to be provided with a pinching tag in such a manner as to extend therefrom. In this case, when the upper case 23 and the lower case 25, which are constructed identically, are brought into the face-to-face superposed state for engagement with each other, as is shown in FIG. 8, to form therein the divided compartments 27, a vertical separation of pinching tags 51 which are provided on the upper case 23 and the lower case 25, respectively, facilitates the release of the engagement between the upper case 23 and the lower case 25.

Moreover, a stepped bent portion is formed along an outermost circumference of the upper case 23 and the lower case 25 by bending slightly a circumferential edge thereof. As with the elongated projection 41 and the recessed groove 43, this stepped bent portion is formed on either of the sides of the case across the center line 45, whereby when the upper case 23 and the lower case 25 are brought into the face-to-face superposed state, the stepped bent portion on one of the cases covers the circumferential edge of the other case on which no stepped bent portion is formed, whereby the dustproofness and waterproofness are increased.

Furthermore, large and small quadrangular frame portions 53a, 53b are provided on an exterior bottom surface portion of each divided compartment 27 in such a manner as to extend outwards therefrom so as to fit on and in their mating small and large frame portions, whereby even though cartridge storage cases 100 are placed one upon another, the occurrence of a relative horizontal deviation therebetween is restricted when quadrangular frame portions 53a, 53b on a lower surface of the upper cartridge storage case 100 fit on and in quadrangular frame portions 53a, 53a on an upper surface of the lower cartridge storage case 100, whereby the collapse of cartridge storage cases which are vertically stacked up can be prevented.

The upper case 23 and the lower case 25 are each made up of an integral molded part of a plastic resin. Because of this, a mass production of upper cases 23 and lower cases 25 which have such fastness properties as to enable the protection of cartridges and proper impact absorbing properties is enabled with ease and at low cost using a material which is relatively easy to handle.

This plastic resin is such as to include any of, for example, polyethylene terephthalate, polypropylene, and polystyrene. Using any of polyethylene terephthalate, polypropylene, and polystyrene as the plastic resin facilitates the acquisition of a material, and in addition, cartridge storage cases can be recycled and reused when they are disposed of, this enabling an easy and inexpensive vacuum molding.

In addition, a plastic resin having a light transmitting property is preferable, whereby even in a case where the upper case 23 and the lower case 25 are brought into engagement with each other so as to produce a tightly closed state in the divided compartments 27, the cartridges 21 which are stored in the divided compartments 27 are visible from the outside, thereby making it possible to easily grasp a cartridge storing condition within the divided compartments 27.

In addition, by forming the case using a plastic resin sheet of a thickness in the range of 0.5 to 2.0 mm through an orientation process, a minimum structural strength for the divided compartment which stores therein the plurality of cartridges 21 can be secured economically, and the weight of the whole of the case can be minimized while satisfying the minimum strength. In addition, by forming the case from the material having the aforesaid thickness, the case is allowed to be deformed properly when an external force is applied thereto, the impact absorbing effect on the stored cartridges can be secured to an optimum level. Namely, with a material which is thinner than the aforesaid thickness, the deformation tends to occur too easily, reducing the impact absorbing effect.

On the contrary, with a material which is thicker than the aforesaid thickness, the deformation tends to occur with difficulty, a state results in which the impact is transmitted directly to the stored cartridges. In the configuration of the embodiment, by setting the thickness of the plastic resin sheet to the aforesaid thickness, the formation of an optimum impact absorbing portion (crushable zone) becomes possible.

According to the cartridge storage case which is configured as has been described heretofore, since at least the divided compartment is formed which holds therein the group of cartridges which is formed into the block-like shape by arranging the plurality of cartridges in parallel in the thickness direction thereof and the spaced portions are formed in corner portions of the divided compartment, the plurality of cartridges can be stored in the divided compartment altogether due to the plurality of cartridges being arranged into the single block, and this enables the cartridge storing work to be completed within a short period of time with good efficiency, thereby making it possible to remarkably increase the efficiency of the cartridge storing work. In addition, in case the case falls to hit the ground or the like, an impact generated thus can be absorbed by the spaced portions, thereby making it possible to increase the resistance to impact relative to the stored cartridges.

Although it has been found that the cartridge storage case according to the preceding invention is superior in several points, it has also been noticed that the cartridge storage case has still a weak point to be dealt with successfully.

That is, it has been found that in the midst of carrying the cartridge storage case by gripping on one end of the case by the hand with the other end thereof placed downwards, when an unreasonable force is applied to the upper case and the lower case in a direction in which the upper case and the lower case are forcibly separated from each other, there is caused a risk that the upper case and the lower case are forcibly separated from each other, and the cartridges which constitute the contents of the cartridge storage case get loose and fall to hit the ground or the like violently to thereby be broken and damaged.

SUMMARY OF THE INVENTION

The invention was made with a view to solving the problem of the cartridge storage case of the preceding invention, and an object thereof is to provide a cartridge storage case in which even though an unreasonable force is applied to an upper case and a lower case in a direction in which the upper case and the lower case are forcibly separated from each other, the separation of the upper case and the lower case can be prevented.
(1) According to an aspect of the present invention, a cartridge storage case comprising: a first cartridge storage case having a substantially rectangular shape, and including a front projection, a first recess and a first divided compartment holding a group of cartridges which is formed into a block-like shape by arranging a plurality of flat-shaped cartridges in parallel in a thickness direction thereof; a second cartridge storage case having a substantially rectangular shape, and including a second projection, a second recess and a second divided compartment having a substantially identical shape with the first divided compartment; and a hinge connecting a side of the first cartridge storage case with a side of the second cartridge storage case being opposite to the side of the first cartridge storage case, wherein the first and second cartridge storage case and hinge are integrally molded, and the first and second divided compartment constitute a cartridge storage portion by superposing and engaging with the first and second cartridge storage case, the cartridge storage portion having a volume which is twice a volume of one of the first and second cartridge storage case, wherein the first and second cartridge storage case comprise an elongated handle through hole, respectively, which is provided in a side location which is opposite to a side where the hinge is provided in the first and second cartridge storage case.

(2) A cartridge storage case as described in the item (1), which comprises a through hole provided in a circumferential edge area of the first and second cartridge storage case.

(3) A cartridge storage case as described in the item (2), which comprises a fastening member fastening together the first and second cartridge storage case, the fastening member being mounted in the elongated handle through hole.

(4) A cartridge storage case as described in item (3), wherein the fastening member is a fastening strap of a snap-lock pin.

(5) A cartridge storage case as described in item (1), which comprises a security seal affixed to the elongated handle through hole.

By adopting the configuration described above, the cartridge storage case can be obtained in which even though an unreasonable force is applied to the upper case and the lower case of the cartridge storage case in a direction in which the upper case and the lower case are separated from each other in such a state that the cartridges are stored in the cartridge storage case, the upper case and the lower case are never separated from each other.

**BRIEF DESCRIPTION OF THE DRAWINGS**

[0037] The invention disclosed herein will be understood better with reference to the following drawings of which:

[0038] FIGS. 1A to 1C are diagrams showing Embodiment 1 of the invention;

[0039] FIGS. 2A to 2D are diagrams showing Embodiment 2 of the invention;

[0040] FIGS. 3A to 3D are diagrams showing Embodiment 3 of the invention;

[0041] FIGS. 4A and 4B are diagrams showing Embodiment 4 of the invention;

[0042] FIGS. 5A to 5C are diagrams showing Embodiment 5 of the invention;

[0043] FIG. 6 is an explanatory diagram showing a first conventional method of storing a plurality of cartridges;

[0044] FIG. 7 is an explanatory diagram showing a second conventional method of storing a plurality of cartridges;

[0045] FIG. 8 is a perspective view showing an upper case and a lower case, which are being separated, of a cartridge storage case according to the invention;

[0046] FIGS. 9A and 9B are explanatory diagrams of the upper case shown in FIG. 8, in which a plan view of the upper case is shown at FIG. 9A, and a side view thereof at FIG. 9B;

[0047] FIGS. 10A and 10B are explanatory diagrams of the cartridge storage case, in which a view seen in a direction indicated by an arrow A in FIG. 9A is shown at FIG. 10A, and an external view of a main part of the cartridge storage case is shown at FIG. 10B which shows impact-absorbing ribs which are provided on an exterior wall surface of a divided compartment.

**DETAILED DESCRIPTION OF THE INVENTION**

[0048] Hereinafter, preferred embodiments of cartridge storage cases according to the invention will be described in detail by reference to the accompanying drawings.

**Embodyment 1**

[0049] FIGS. 1A to 1C show a cartridge storage case according to Embodiment 1, in which FIG. A is a plan view showing a state in which the cartridge storage case according to the invention is opened, FIG. 1B is a plan view showing a state in which the cartridge storage case is closed, and FIG. 1C is a vertical sectional view of the cartridge storage case shown in FIG. 1C.

[0050] In FIG. 1A, reference numeral 23 denotes an upper case serving as a first cartridge storage case, 25 denotes a lower case serving as a second cartridge storage case, and 100 denotes a cartridge storage case which is made up by connecting the upper case 23 with the lower case 25 by means of a hinge 100.

[0051] Reference numeral 100 denotes a divided compartment (which is denoted by 27 in FIG. 9), 100L denotes a second divided compartment (which is denoted by 27 in FIG. 9), and 100g denotes an elongated handle through hole. The upper case 23, the lower case 25 and the hinge 100 are molded into an integral part through plastic injection molding or the like. The hinge 100 is molded thinner than the thickness of the upper case 23 and the thickness of the lower case 25, and the upper case 23 and the lower case 25 are made to be folded over so as to be superposed on each other in a face-to-face fashion from the hinge 100 which functions as a center of the folding. Then, when, firstly, cartridges are stored in the divided compartments and thereafter, the upper case 23 is folded over the lower case 25 so as to be superposed thereon in the face-to-face fashion from the hinge 100 as the center of the folding, the cartridge storage case 100 results as shown in FIG. 1B. In such a state that the upper case 23 and the lower case 25 are folded to be superposed on each other in such a way, the first divided compartments 100L of the upper case 23 and the second divided compartments 100L of the lower case 25 are superposed vertically on each other in a face-to-face fashion as shown in FIG. 1C, so as to form divided compartment spaces each having a storage capacity which is twice that of the divided compartments which make them up, and cartridges are stored in the divided compartment spaces (cartridge storage portions) so formed.
[0052] In addition, since the elongated handle through holes 100g are also superposed on each other in the similar way, the cartridge storage case 100 can be carried in a suspended fashion by gripping on this handle through holes, which are now superposed on each other to form a single elongated handle through hole, by the hand as a handle of the case. Then, even though the cartridge storage case 100 is carried in the suspended fashion by the hand, since the hinge is formed on a side of the case which is opposite to a side thereof where the superposed elongated through holes 100g lie now, even though an unreasonable force is applied to the upper case and the lower case in the direction in which the cases are forcibly separated from each other, the upper case and the lower case are never disengaged from each other on the side where the hinge is formed, and therefore, the cartridge storage can be obtained which is safer than that provided by the preceding invention.

Embodiment 2

[0053] FIGS. 2A to 2D show Embodiment 2, in which an upper case and a lower case are made separable, compared to the configuration shown in FIG. 1, so as not to be disengaged from each other. Namely, commercially available fastening members are positively used, and shown in FIGS. 2A and 2B are fastening members, a fastening strap being shown in FIG. 2A and a snap-lock pin in FIG. 2B.

[0054] A fastening strap 91 shown in FIG. 2A is formed from a plastic material and is made up of a locking portion 91A which has one locking hole 91a and a strap-like element 91B which is continuously connected to the locking portion 91A and which has a number of locking ribs 91b provided on both sides thereof. Then, the strap-like element 91B is wound round an object to which it is fastened, and a distal end of the strap-like element 91B is passed through the locking hole 91a in the locking portion 91A. Therefore, when the distal end of the strap-like element 91B is pulled strongly, the locking ribs 91b on the strap-like element 91B are locked inside the locking hole 91a, whereby a required fastening is obtained.

[0055] A snap-lock pin 92 shown in FIG. 2B is made up of a locking head 92A and a penetrating member 92B which is fixed to the locking head 92A, whereby when the penetrating member 92B is passed through a through hole in an object to which the snap-lock pin 92 is fastened, although the penetrating member 92B and a distal end portion 92C are contracted diametrically while they are passing through the through hole, the penetrating member 92B and the distal end portion 92C are allowed to expand to their original positions after having passed through the through hole, whereby a reverse movement thereof is prevented, so as to obtain a required fastening.

[0056] FIG. 2C is a plan view showing fastening positions on a cartridge storage case which is fastened by means of the fastening members shown in FIG. 2A, and FIG. 2D is a vertical sectional view of the cartridge storage case shown in FIG. 2C taken along the line which passes through left and right through holes 100h, first divided compartments look and second divided compartments 100l.

[0057] In the plan view shown in FIG. 2C, reference numeral 23 denotes an upper case, 25 a lower case, 100h through holes opened in the upper case and the lower case, 100g elongated handle through holes opened in the upper case and the lower case, and 100f a hinge which connects the upper case 23 with the lower case 25. The through holes 100f are formed in the vicinity of a circumferential edge of a rectangular formed by the upper case 23, the lower case 25 and the hinge 100f.

[0058] In the plan view shown in FIG. 2C, by folding the upper case 23 over the lower case 25 from the hinge 100f which functions as a center of the folding so that the upper case 23 is superposed on the lower case 25 in a face-to-face fashion, divided compartments 100k in the lower case 25 and their mating divided compartments 100l in the upper case 23 are integrated with each other individually, and the through holes 25b and 23b which are opened in both the upper case 23 and the lower case 25 are also integrated so as to be concentric with each other, whereby bypassing the fastening members shown in FIG. 2A (the snap-lock pin 92 in the figure) through the through holes 25b and 23b so as to fix the upper case and the lower case together, the upper case and the lower case are integrated together strongly and rigidly, and even though a large magnitude of force is applied to the upper case and the lower case which are in the integrally fastened state in a direction in which the upper case and the lower case are separated from each other during transportation, the upper case and the lower case are never separated from each other in any case.

[0059] Note that when the cartridges are removed from the cartridge storage case for use after the completion of transportation, the fastening members may be cut to be broken.

Embodiment 3

[0060] Embodiment 3 is such that a security seal is wound round a handle of a cartridge storage case which is made up by integrally connecting an upper case and a lower case together so as to secure the integral connection of the upper case and the lower case, as well as the security of the cartridge storage case.

[0061] FIGS. 3A to 3D show diagrams which describe Embodiment 3, in which FIGS. 3A to 3D are plan views of cartridge storage cases 100 to 103 which are different in the number of through holes and snap-lock pins, with a security seal 100s used on all the cartridge storage cases 100 to 103. The security seal 100s is wound round an elongated handle through hole 100g, so as to make difficult the disengagement of the upper case and the lower case. In addition, since the upper case cannot be disengaged from each other without breaking the security seal 100s, the security of cartridges stored in the cartridge storage case can be ensured.

[0062] A cartridge storage case 100 which uses four through holes and four snap-lock pins is shown in FIG. 3A, a cartridge storage case 101 which uses four through holes and two snap-lock pins is shown in FIG. 3B, a cartridge storage case 102 which uses two through holes 2 and two snap-lock pins is shown in FIG. 3C, and a cartridge storage case 103 which uses six through holes 2 and two snap-lock pins is shown in FIG. 3D.

Embodiment 4

[0063] While in Embodiment 2, the through holes are opened in the upper case and the lower case, Embodiment 4 offers a method of ensuring the integral connection of an upper case and a lower case without opening through holes.

[0064] FIGS. 4A and 4B show drawings which explain Embodiment 4, in which FIG. 4A shows an end portion of a flange area of a cartridge storage case 104, and FIG. 4B is a plan view of the cartridge storage case 104.
In the figures, reference numeral 93 denotes a commercially available clip, and such clips are provided at four locations on a circumferential edge portion of the cartridge storage case 104 in such a manner as to pinch the upper case and the lower case between legs thereof individually. By adopting this configuration, the integral connection of the upper case and the lower case can be ensured, and moreover, a production step of opening through holes is made unnecessary.

Embodiment 5

Embodiment 5 is characterized in that an elongated handle through hole is also provided on the hinge side of the cartridge storage cases of Embodiments 1 to 4. While the cartridge storage cases of Embodiments 1 to 4 have to be carried by one of the hands, according to Embodiment 5, there is provided a cartridge storage case which is superior in that the cartridge storage case can be carried in both ways, that is, the cartridge storage case can be carried by both the hands and by one of the hands in the suspended fashion.

FIGS. 5A to SC show a cartridge storage case according to Embodiment 5, in which FIG. 5A is a plan view showing a state in which the cartridge storage case is opened, FIG. 5B is a plan showing a state in which the cartridge storage case is closed, and FIG. 5C is a vertical sectional view of the cartridge storage case taken along the line which passes through elongated handle through holes shown in FIG. 5B.

Reference numeral 105 denotes a cartridge storage case according to Embodiment 5 of the invention, 105g an elongated handle through hole which is provided additionally on a hinge side of the cartridge storage case. In the event that reference numerals imparted to the other constituent portions of the cartridge storage case of the embodiment are like to those shown in FIGS. 1A to 3D, since they denote like constituent portions to those shown in the figures, the description thereof will be omitted herein to avoid the repetition of the same description.

Since elongated handle through holes 105g, 105g opened in an upper case and a lower case, respectively, are superposed on each other by folding an upper case over a lower case from a hinge 100 which functions as a center of the folding so that the upper case is superposed on the lower case in a face-to-face fashion, the cartridge storage case can be carried by gripping on both the elongated handle through holes by both the hands as handles of the case, whereby the cartridge storage case can be obtained which is easy to carry.

As this occurs, needless to say, by applying the techniques disclosed in Embodiments 2 to 4 to Embodiment 5, the upper case and the lower case are fastened together using the fastening members or held together using the clips so as not to be disengaged from each other, and the security seal is affixed to both the elongated handle through holes.

As is seen from what has been described heretofore, the strong and rigid cartridge storage case can be obtained in which even though an unreasonable force is applied to the upper case and the lower case of the cartridge storage case in the direction in which the cases are separated from each other in such a state that cartridges are stored in the cartridge storage case, the upper case and the lower case are never disengaged from each other in any case since they are hinge connected together.


What is claimed is:

1. A cartridge storage case comprising:
   a first cartridge storage case having a substantially rectangular shape, and including a first projection, a first recess and a first divided compartment holding a group of cartridges which is formed into a block-like shape by arranging a plurality of flat-shaped cartridges in parallel in a thickness direction thereof;
   a second cartridge storage case having a substantially rectangular shape, and including a second projection, a second recess and a second divided compartment having a substantially identical shape with the first divided compartment; and
   a hinge connecting a side of the first cartridge storage case with a side of the second cartridge storage case being opposite to the side of the first cartridge storage case, wherein
   the first and second cartridge storage case and hinge are integrally molded, and
   the first and second divided compartment constitute a cartridge storage portion by superposing and engaging with the first and second cartridge storage case, the cartridge storage portion having a volume which is twice a volume of one of the first and second cartridge storage case,
   wherein

2. A cartridge storage case as claimed in claim 1, which
   comprises a through hole provided in a circumferential edge area of the first and second cartridge storage case.

3. A cartridge storage case as claimed in claim 2, which
   comprises a fastening member fastening together the first and second cartridge storage case, the fastening member being mounted in the elongated handle through hole.

4. A cartridge storage case as claimed in claim 3, wherein
   the fastening member is a fastening strap of a snap-lock pin.

5. A cartridge storage case as claimed in claim 1, which
   comprises a security seal affixed to the elongated handle through hole.

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