APPARATUS FOR STORING AND RETRIEVING CARD SIZED OBJECTS

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ABSTRACT

An apparatus for storing and retrieving card sized objects with a case body with a channel sufficient to contain a plurality of card sized objects from all sides, an inlet on a side of the case body through which cards may pass, fixed obstructions in the inlet opening against which the card is compressed as it passes into or out of the case body, and an opening on the face or faces of case body of sufficient size to permit contact with card faces. An alternate embodiment includes the case body with an inlet on two opposing sides of the case body through which cards may pass. An alternate embodiment includes fixed obstructions on the opening of the inlets against which the card is compressed as it passes into or out of the case body.
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CROSS REFERENCE TO RELATED APPLICATIONS

[0001] Not Applicable

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

[0002] Not Applicable

DESCRIPTION OF ATTACHED APPENDIX

[0003] Not Applicable

BACKGROUND OF THE INVENTION

[0004] This invention relates generally to the field of personal object storage and more specifically to an apparatus for storing and retrieving card sized objects.

[0005] An analysis of existing methods of storing and retrieving card sized objects in devices yields the following findings.

[0006] Existing methods of retention can be categorized as follows. These methods may be employed in a multitude of combinations.

[0007] Compression: This method utilizes a flexible member or mechanism to apply force to the object to be retained. The force may be incidental at insertion or applied constantly for object retention. For example, elastic bands may compress an array of cards to form a means of carrying cards between them. Springs may act as detents to hold cards inside a device, a money clip-like spring may press down on an array of cards to hold them in place.

[0008] Friction: This method employs a contact surface whereby motion is impeded by frictional forces in the area of contact such as via a flexible sleeve, or compressing surfaces. Friction may be applied to edges or faces of cards or a combination thereof. In the case of a card or cards in a sleeve, friction is applied on the top and bottom faces of the object where it meets the sleeve, and compression is applied through the entire object with friction applied at each object interface. In other words, the sleeve compresses the object and friction applies to each surface where the force is transferred through the array, between cards themselves and between the cards and the sleeve.

[0009] Planar Impediment: This method utilizes a member, device or wall to enclose the object preventing passage. Members may be fixed, slide, snap or swing into place by many methods such as hinges, pivots, snaps, elastic or hook and loop enclosures to name a few. Planar impediments essentially block passage of the object without necessarily applying specific compressive or frictional forces. For example, objects enclosed on all sides by box are not able to exit that box, yet an opening of sufficient size in the box, toward which forces are applied to the objects, may result in the objects leaving the box through that opening. For example a deck of cards in their box are contained until the box is opened and the cards are removed via a force be it gravity, suction or a directional pull from the operator.

[0010] The embodiment of this invention is an effort to maximize the benefits of each retention method, utilizing a minimal amount of material and construction effort, to develop a compact, effective mechanism with improved usability, safety and durability.

[0011] From U.S. Pat. No. 5,358,019 A Pocket card holder with money clip (Yancey E. Sumner, III)

[0012] Method: Planar impediments along the long edges of the card array (10L, 10R) with a vertical spring compression force (12) applied to the top card in the array.

[0013] From U.S. Pat. No. 3,648,832 Card Carrying Case (David Kirshenbaum)


[0015] From U.S. Pat. No. 5,680,223 Card case having a finger access hole (Masuhiro Mitsuyama)


[0017] From U.S. Pat. No. 5,038,926 Device for keeping cards (Aart van der Toorn)

[0018] Method: Box like enclosure is accessed via a rotating planar impediment (lid) that is moved freely into and out of place by the operator.

[0019] From U.S. Pat. No. 4,450,955 A Card holder (Elmer F. Featherston)

[0020] Method: Channel with flexible members pressing card downward toward base of channel.

[0021] From U.S. Pat. No. 7,921,890 B2 Credit card case (Wei-Teh Ho)

[0022] Method: box case with flexible barbed members compressively acting on side edges of cards that lock cards in place once the card ends have passed the barbed mechanism.


[0024] Method: Tabs 203 exert a force on the edges of cards and tab 204 exerts a force on the face of the removable cards to hold them in place at any length along device. Constant compression of tabs along faces edges of cards for retention in the device.

[0025] From U.S. Pat. No. 7,527,081 Card holder and billfold (Jeff D. Coates)

[0026] Method: Elastic members hold planes of material against one another compressing objects in between


[0028] Method: An array of parallel slots with resilient pads that create edge friction on inserted cards in slots. The cards are advanced into or out of the case by way of a button tab mechanism allowing operator to select the slot associated with a specific button and advance it out of the case.

[0029] From U.S. Pat. No. 6,981,591 B2 Case with elastic-secured end cap (Andrew J. Logan)

[0030] Method: Elastic compression holds a cap into the open end of a box thereby enclosing a plurality of card sized objects inside the box.


[0032] Method: Hinged clamshell case contains a plurality of accordion-like sleeves for holding card shaped objects or personal items using planar impediments to contain cards in sleeves.


[0034] Method: A chamber is formed between the cardholder element (110) and the back panel (15) of the device into which cards may be inserted and advanced through a central opening (140). This chamber employs the planar impediment method of retaining the cards between the card-
holder element, the back panel of the case, and when closed, the hinged lid of the case to prevent the card movement out of the cardholder element.

Each of the retention methods is not without its drawbacks as summarized below and by way of example detailed in existing designs.

SUMMARY

Compression: Compression mechanisms degrade under constant loads, under periodic loads of varying amounts and over time as the mechanisms reach flexural limits of repetition. Devices with springs, living hinges and flexible members are subject to wear of those mechanisms over time.

Friction: In the cases where friction is applied via a flexible surface, such as leather or plastic, an eventual failure may result as the material yields to the rigidity of the object contained. Friction may also impair the storage and retrieval processes for the object, making retrieval slower as conditions of wear, heat or moisture vary. Friction applied by inflexible members may abrade surfaces in the area of contact leading to diminished holding capability, cosmetic or even structural damage to the object being held.

Planar Impediment: Planar impediments essentially block passage of the object without necessarily applying specific compressive or frictional forces. Planar impediments however must be displaced or the object itself repositioned in order to move the object past the obstruction and out of the case. These mechanisms often require moving parts which can wear out over time, for example hinges failing, clasps breaking, walls deforming. These mechanisms also often require two hands to operate, and manual dexterity to engage or disengage the mechanism. Once out of the way, a planar impediment may permit unintended passage of cargo releasing more than the intended object from the container.

Detail

From U.S. Pat. No. 5,358,019 A Pocket card holder with money clip (Yancey E. Sumner, III)

Deficiencies: Spring will eventually degrade, applies greater force to top card as more cards are added and abrades face of top card as it is removed/inserted. Manual and visual access to lower cards is hindered by the location of the spring, and two hands are required to select a card for retrieval, as operator must pull other cards from under the spring to identify them for retrieval.

From U.S. Pat. No. 3,648,832 Card Carrying Case (David Kirshenbaum)

Deficiencies: Constant compression will lead to deformation of card and degradation of flexible members over time, locus of compression points can abrade card surfaces as they are repeatedly inserted and removed over the life of the device.

From U.S. Pat. No. 5,080,223 Card case having a finger access hole (Masuhiro Mitsuyama)

Deficiencies: Sleeves will eventually wear out over time and lose compressive force; materials themselves may wear out under use, and can trap foreign substances inside them such as lint, dirt, oils and moisture. Dropping or inverting sleeves may release cards.
other hand. There is a risk of dropping one or all cards once the cap has been removed and no method of retention is present beyond gravity and the upright alignment of the open case.

Deficiencies: The case when open applies no forces to retain cards other than gravity and planar obstructions to forward and backward shifting. Any tilting of the device will allow gravity to act on cards removing them from the case. It is possible that other forces such as wind or a jolt to the user could dislodge the plurality of cards once the case is open. There is bulk associated with fully enclosed designs that occupy the space of the cargo as well as the surrounding area, which can be undesirable to minimalist and active users. Hinges and clasps introduce complexity to manufacture and risks to product durability in the long run. Part failures can lead to complete loss of cargo.

Deficiencies: Once the case is open, the card retaining method is no longer employed, exposing cards to the risk of inadvertent dislodging forces. Considering the case has other purposes than cardholding, the user may open the case for another purpose and thereby not paying attention to the cards now at risk of escaping. The case is comprised of a flexible plastic-like material and employs living hinges which eventually fatigue and fail, risking unexpected release of card contents. Retrieving a credit card is a two handed operation requiring attention to ensure no cards are lost in the process. The process of opening the case selecting the card, and closing the case with the selected card in hand, risks inadvertent dropping of the card or the case.

BRIEF SUMMARY OF THE INVENTION

The primary object of the invention is to provide an apparatus for storing and retrieving credit card sized objects.

Another object of the invention is to provide an apparatus for efficient access to cargo.

Another object of the invention is to provide improved safety requiring less time and attention to operate.

A further object of the invention is to provide one handed operation for card selection.

Yet another object of the invention is to provide an apparatus combining lightness, strength and convenience of construction.

Other objects and advantages of the present invention will become apparent from the following descriptions, taken in connection with the accompanying drawings, wherein, by way of illustration and example, an embodiment of the present invention is disclosed.

In accordance with a preferred embodiment of the invention, there is disclosed an apparatus for storing and retrieving card sized objects comprising: a case body comprising a channel sufficient to contain a plurality of card sized objects from all sides, an inlet on a side of the case body through which cards may pass, fixed obstructions in the inlet opening against which the card is compressed as it passes into or out of the case body, and an opening on the face or faces of case body of sufficient size to permit contact with card faces.

BRIEF DESCRIPTION OF THE DRAWINGS

The drawings constitute a part of this specification and include exemplary embodiments to the invention, which may be embodied in various forms. It is to be understood that in some instances various aspects of the invention may be shown exaggerated or enlarged to facilitate an understanding of the invention.

FIG. 1 is a plan view of top, front and right side views of an embodiment of the invention (10), inlet opening (11), opening through which cards can be touched (12), and cross sections A-A and B-B indicated for subsequent reference in FIG. 2 and FIG. 7.

FIG. 2 is a cross sectional view of Section A-A which reveals the interior structure of the invention, case body (20), obstructing parts (21) and the inlet containing walls (22) of the case body.

FIG. 3 is a schematic of the interior surfaces of the container, obstructing parts (30) and case body interior surfaces (31) and case body (32).

FIG. 4 is a top plan view of the case body (43) interior with the Section B-B cross section positioned alongside to demonstrate insertion of the card (40) under compression at the obstructing parts (41) at the same time not under compression inside the remainder of the case body interior surfaces (42).

FIG. 5 is a top plan view of the case body (53) interior with the Section B-B cross section positioned alongside to demonstrate completed insertion of the card (50) no longer under compression having cleared the obstructing parts (51) at the same time not under compression inside the remainder of the case body interior surfaces (52).

FIG. 6 is a top plan view of the case body (63) interior with the Section B-B cross section positioned alongside to demonstrate removal of the card (60) under compression at the obstructing parts (61) at the same time not under compression inside the remainder of the case body interior surfaces (62).

FIG. 7 is a cross sectional view Section B-B view of retaining surfaces of preferred embodiment of the device (70), with an enclosed bottom face (71), and a two sided model (72).

FIG. 8 is a perspective view of the case body (80) positioned to reveal the inner case surface (82) an obstructing part (81) and the retaining surfaces of the card case body interior (83).

FIG. 9 is a perspective view showing cards moved into the device.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Detailed descriptions of the preferred embodiment are provided herein. It is to be understood, however, that the present invention may be embodied in various forms. Therefore, specific details disclosed herein are not to be interpreted as limiting, but rather as a basis for the claims and as a representative basis for teaching one skilled in the art to employ the present invention in virtually any appropriately detailed system, structure or manner.

For the sake of description a card case body is a six sided shape with the two largest surfaces being called faces and the four perimeter surfaces being called sides.

Refer to FIG. 1 to FIG. 3. An apparatus for storing a plurality of objects such as credit cards and identification
cards mainly has a case body \((10,20,32)\) formed with an inlet disposed at one end thereof \((11)\), with openings in the card case body face or faces of sufficient size to permit contact with card faces \((12)\), and has obstructing parts \((21,31)\) disposed respectively on opposing interior sides of said inlet \((11)\).

\[0083\] Refer to FIG. 4 to FIG. 5 by means of such a structure, a card \((40)\) inserted into inlet \((11)\) is compressed at the point of interference with obstructing parts \((41)\) of the case body and gripped between obstructing parts \((41)\) via the compressive strength of card itself as said card \((40)\) is moved between obstructing parts \((41,51)\) until card \((40,50)\) has moved fully past obstructing parts \((41,51)\) and is thus relieved of compressive forces and thereby contained within the case body inner surfaces \((52)\) until which time retrieval is desired.

\[0084\] Refer to FIG. 6 At the moment of retrieval the process is reversed, by sliding card \((60)\) between obstructing parts creating compressive force within said card, thereby compressing card edges into the obstructing parts \((61)\) creating a compressive force to hold card firmly as it slides out of the containing area \((62)\) until card is clear of the obstructing parts \((61)\) and thereby free of compressive forces and elastically returning to original uncompressed form.

\[0085\] Refer to FIG. 7 This diagram depicts the preferred and possible alternate configurations of the invention. Two open faces for contact with the cards \((70)\) open one face for contact with the cards \((71)\) and a card case with multiple case body interiors separated by the face of their adjoining plane. An alternate embodiment of the apparatus for storing and retrieving card sized objects with case body comprising an inlet on two opposing sides of the case body through which cards may pass further comprising fixed obstructions on the opening of both inlets against which the card is compressed as it passes into or out of the case body. These and other configurations are possible by repositioning the card case interior as desired for a novel configuration of the card carrying device.

\[0086\] Refer to FIG. 8 This perspective diagram indicates the location of the obstructing part \((81)\) and the case body interior \((82)\) and the retaining walls of the case body

\[0087\] Refer to FIG. 9 This perspective diagram demonstrates the movement of cards into the case card body interior.

\[0088\] The embodiment of this invention employs several retention methods in a novel way in an attempt to maximize the benefits of each method while mitigating the drawbacks of the others. By utilizing the card itself as the force for compression, this design is able to provide a simple lightweight case capable of one handed selection of the desired card in the array, with secure retention of each card during the selection process, and a deformation free, secure storage area with no moving parts to snag, wear or fail.

\[0089\] At entry, cards slide into the inlet and are slightly obstructed by curved surfaces on opposing walls of the inlet sides. The curved surfaces are a fixed distance apart that is slightly less than the width of a standard card and cause the card to momentarily bend as it passes between them. The curved surfaces make minimal contact with the card edges given the frictional surface area is only that of the area where they come in contact with the straight edges of the card. As the friction is applied to the edges of the cards and not to their faces, there is little risk of defacing a card as the card slides into or out of the case body. Though minimal, this friction provides a secure hold on the card for the length of the card edge allowing a card to be held at varying depths into our out of the case. This capability facilitates the advancing of cards with one hand by using the thumb to advance cards in the array until the desired card is selected. At which point the other hand can simply grab that card from the bottom and pull it from the array. This is a similar action to that employed when using one hand to select a playing card from a deck of cards. It is a familiar action and requires only gross motor skill of the hand and thumb to select and retrieve a card. By contrast, the pinching and sliding of sleeves or the en masse open handed sort of the planar impendiment designs, require more fine motor skill and control to navigate card selection.

\[0090\] As the card enters the case body, it exerts a compressive force to the slightly narrower fixed obstructions at the mouth of the case body inlet. This force generates the friction necessary to securely move the card into or out of the case body, held firmly to prevent inadvertent loss of the cards. Once the card has slid past the curved obstructing surfaces completely, it is free of compressive forces and rests in original form within the case body, where it is held by planar impendiments at the back of the case and by the curved surfaces of the inlet obstructions. As the cards in the containing area are not subject to lateral compressive forces, they are not subject to the potentially damaging deformation seen in some constant compression designs. Though some constant compression planar impendiment designs that do not deform cards given the planes used to compress the cards apply uniform pressure over the entire face of the card on that plane, there remains a drawback for this design which is the same as that of other planar impendiment designs: once compression is relieved, cards are free to move as prevailing forces dictate and can fall free of the surface with little to no provocation. Further, if a compression planar impendiment can be partially opened by prying open one end of the device, the manual dexterity required to keep the case open and then pinch/sort the cards in the array can be distracting and prone to error. With the case partially open in these designs, the variance in compressive forces can actually “squirt” cards from the array as the compression angle changes forces between the cards in the array. By contrast, the embodiment of the proposed invention applies a uniform compressive force to each card for the length of the card edge without risk of squirming or elastic failure.

\[0091\] Though the embodiment of this invention employs a planar impendiment to contain the cards within the case body, the proposed design overcomes the major drawback of other planar impendiment designs by making the compressive force of the card itself the means of engaging and disengaging the planar impendiment. The card, deflected minimally in passing the impediment is securely held for the duration of passage, as is any other card sent into the impediment in series or in parallel. That is to say that only the cards receiving a force sufficient to move them along their entirety, out of the impediment are free to leave the case body. In contrast to the proposed invention transitional engagement method, which grips the card or cards for the duration as they transition into or out of the case, the other planar impendiment designs such as contained box, and loose sleeve designs have employed a binary method of engagement which is either engaged or disengaged for the entire array, and is subject to card loss if jostled while the planar impediment is disengaged.

\[0092\] The embodiment of this invention utilizes the renewable compressive forces of the cards themselves as the mechanisms of retention within the case body. Cards typically expire every few years, providing renewed compressive
forces with each new card. Cards experience minimal deflection and minimal wear entering and leaving the case, and are free of compressive forces while contained in the case, providing for a long useful life. As no moving parts are required of the case, manufacture can be quite straightforward with little concern for sourcing various parts and or fitting them together. The design need only act on the cards in certain areas so a minimum of material is required to satisfy these design requirements.

[0093] While the invention has been described in connection with a preferred embodiment, it is not intended to limit the scope of the invention to the particular form set forth, but on the contrary, it is intended to cover such alternatives, modifications, and equivalents as may be included within the spirit and scope of the invention as defined by the appended claims.

What is claimed is:

1. An apparatus for storing and retrieving card sized objects comprising:
   a case body comprising a channel sufficient to contain a plurality of card sized objects from all sides;
   an inlet on a side of the case body through which cards may pass;
   fixed obstructions in the inlet opening against which the card is compressed as it passes into or out of the case body; and
   an opening on the face or faces of case body of sufficient size to permit contact with card faces.

2. An apparatus for storing and retrieving card sized objects as claimed in claim 1 further comprising guiding surfaces inside the case body to aid in card alignment with the fixed obstruction points of the case body.

3. An apparatus for storing and retrieving card sized objects as claimed in claim 1 further comprising fixed retaining surfaces inside case body channel to hold cards inside the case body.

4. An apparatus for storing and retrieving card sized objects as claimed in claim 1 with said case body comprising an inlet on two opposing sides of the case body through which cards may pass.

5. An apparatus for storing and retrieving card sized objects as claimed in claim 4 further comprising fixed obstructions on the opening of said inlets against which the card is compressed as it passes into or out of the case body.