

Key wallet butterfly type

This invention relates to a wallet for storing keys or similar articles (hereafter commonly called "key"). A key means
5 here a typically metal article, usually elongated, to be gripped manually and inserted in a key hole of the door of a house or car, for locking and unlocking the door by turning the inserted key clockwise or anti clockwise.

Prior art key wallets are e.g.: GB877325A, US1187852A,
10 CH596796A5, DE3702505C1, EP1243198A1, US1494242A and many others.

The words "elastic", "resilient", yield", are mainly used to explain that the element or material can expand in length and/or width, like a rubber or elastic band.

15 The object of the invention is versatile and may be one of more of: comfortable to use; operation by a single hand; intuitive operation; safe operation; reliable operation; long life; suited for mass production; environmental friendly; limited number of parts; compact storage and/or transport in
20 large numbers; compact size; tight fit around both a single or a small number and a large number of keys; trousers pocket size; attractive appearance; easy to repair; easy to recycle; protects keys against damage due to keys slamming against each other while carried around in the trouser pocket; avoids the
25 noise of a rattling key bundle; allows storage of oversized, particularly extremely long, keys; allows easy selection of a single key from a key bundle; allows a single key operatively outside the wallet while the remaining keys of the bundle are stored within the wallet; provides easy access to the stored
30 keys; ease of removing or adding a key to the bundle; the key bundle moves easily in and out the wallet by a simple movement of the user, e.g. his hand or wrist; allows safe storage of a fragile article, e.g. cigarette, in addition to keys; can be used as a toy or exercising implement, e.g. percussion or
35 trampoline for small objects; protects other articles, e.g. mobile phone or money wallet carried in the same pocket or bag against damage, e.g. scratches or wear, caused by keys, and the pocket or bag itself; allows one or more keys attached to the wallet to be outside the wallet while the wallet is closed;

a size sufficient small to fit in a single hand, e.g. approximately credit card format.

The wallet of the invention preferably comprises two shell elements, e.g. halves (also called panels) which are associated
5 by connection means such that they can move relative to one another such that a part of the one shell element, e.g. boundary edge, can move away from the corresponding part of the other shell element to open and close the wallet. Preferably this is by pivoting or swiveling or rotating movement of one or both
10 the shell elements, however a translating movement or the combination of two or more of these movements is also feasible.

Preferably the wallet provides a container the edges and/or sides (also called minor faces) of which are rigid, e.g. provided by a rigid frame, while one or both opposite main faces
15 allow resilient deflection to e.g. repeatedly move between the unloaded flat shape and a bulged shape caused by a load, e.g. the wallet contents, acting perpendicular to the main face. Thus, when hand held, the closed wallet feels solid while at the same time a main face can be squeezed like a sponge by the
20 finger tips and the enclosed key can be sensed through the main face. The solid sense is due to the fixed length and width and thickness provided by the rigid edges.

Preferably the wallet has one or more external wall parts covered or provided by a skin (also called membrane or foil
25 or cloth). The skin can be provided by a single material type or by two or more material types, e.g. located next to each other as e.g. strips, e.g. mutually joined by a seam or seamless joint.

Preferably the wallet in the unloaded, closed position
30 provides the image of a container having flat and/or smooth main faces, while when packed with a stack of keys beyond the original thickness (i.e. the wallet thickness if unloaded) of the closed wallet, one or both main faces are bulged outward, and preferably in both cases the wallet is closed along its
35 external edges, apart from a possible gap between parts that mutually move for opening the wallet.

The elastic behavior of the skin, or part of it, provides

that if the skin is pulled taut across the opening of a drum, like the sheet of a percussion drum, and locally a force normal to the skin is applied, e.g. a finger tip, a local indentation is created and if the force is removed, the skin will immediately
5 spring back or rebound. Typically, the skin will deflect such that the contour of the object, e.g. key, loading the skin, will be visible at the opposite face (in other words the skin obtains a relief making the object visible through the skin by a coining or embossing effect).

10 The wallet can, by way of example, comprise a rigid spine (also called hinge or pivot) providing a pivot axis designed for opening and closing the wallet, two shell elements extending from the spine such that they are hingedly connected at the spine, e.g. similar to the front and back face of a book, which
15 shell elements have a fixed length and width.

One or more of the following applies to the skin or part of it: yields or stretches resiliently or elastically, preferably at least 5 or 10 or 20 or 30 or 50 or 100 or 200%; elastic bias 10 or 8 or 6 or 5 or 4 or 3 or 2 or 1.5 Newton
20 at the most and/or at least 0.1 or 0.25 or 0.5 Newton for 1 millimeter yield for a sheet of 100 millimeter length and 100 millimeter width; stretched or pre tensioned when wallet is opened and/or closed, preferably at least 2 or 5 or 8 or 10% yield; stretch or pre tension increases while moving from opened
25 to closed of the wallet, preferably the increase is at least 2.5 or 5 or 7 or 10%; different from natural leather or tensile rigid (non-stretch) fabric or woven or non-woven; at least 10% more elastic yield compared to natural leather or tensile rigid (non-stretch) fabric or woven or non-woven; thickness at least
30 0.25 or 0.5 or 0.8 or 1.0 or 1.3 and/or maximum 1.7 or 2 or 2.5 or 3 or 5 millimeter, e.g. approximately 1.5; anisotropic yield, preferably at least 5 or 10 or 15 or 20 or 50% different or substantially absent (substantially non-stretch) in the one direction, preferably maximum yield perpendicular to the wallet
35 pivot axis; made of elastic like or rubber like material or rubber or latex or neoprene or woven or knitted or braided from elastic yielding yarns; provides the means to bias the wallet

to the open position; air and/or water permeable or impermeable;
non-slippery surface; extends at both sides of the wallet pivot
axis; completely covers the pivoting wallet panels, preferably
externally; easy pleadable and/or foldable, preferably
5 elastically; substantially resistant against permanent
deformation, e.g. pleads and/or folds and/or wrinkles; a
permanent deformation, e.g. one or more of plead, fold or
wrinkle, is absent; sheet or foil or membrane or cloth or textile
like; puncture resistant; water resistant; tear resistant;
10 easily conforms its shape elastically to contents of wallet;
approximately rectangular shape; a dimension approximately
twice the holder width; partly made from substantially
non-elastic or non-stretch material or substantially less
elastic material, e.g. natural leather or cloth; one or more
15 of wrinkle free, fold free and plead free, in the open and/or
closed position of the unloaded wallet, at least in the area
covering the window; provides one or more of flat, smooth and
level faces of the unloaded wallet in its open and/or closed
position, at least in the area covering the window.

20 One or more of the following applies to the housing: thin
walled; shaftless pivot; pivot axis extends along longer side;
two mutually pivoting panels, preferably providing opposite
main faces; panels have snap fit at the pivot; panels have
integrated hinge parts to provide the pivot; at least one panel
25 comprises a rigid space frame and/or one or more openings; space
frame delimits a single opening; space frame provides the outer
edges; space frame provides a cadre or framework or is
circumferential; space frame is U-shaped and its distal leg
ends are joined with the spine; a panel comprises metal, e.g.
30 plate metal, e.g. the space frame of the panel, or part of it,
comprises metal, e.g. plate metal; a panel is covered by a skin;
an opening (also called window) is closed by a skin; the opening
or openings associated with a main face or panel makes at least
50 or 60 or 70 or 80 or 90% of the surface area of the main
35 face or panel; rectangular shape; length at least twice width;
thickness (in unloaded, closed condition) not more than 20 or
25% or 50% or 75% of width; thickness (in unloaded, closed

condition) at least 5 or 10 and/or not more than 20 or 25 or 30 millimeter; thickness (i.e. measured from the one to the opposite main wall) of the internal space (in unloaded, closed condition) at least 5 or 10 and/or not more than 20 or 25 or 5 30 millimeter (the objects, e.g. keys, are housed in the internal space); elongated; length at least 50 or 80 or 90 millimeter and/ or maximum 110 or 120 millimeter, e.g. approximately 100 millimeter; width at least 30 or 40 millimeter and/or maximum 50 or 60 millimeter, e.g. approximately 45 10 millimeter; at least three or four of its external edges is rigid (in the closed condition the wallet has four edges if rectangular shaped); biased to the open position by the skin and preferably also biased to further open if in the completely open position wherein further opening is e.g. blocked by a stop 15 means of the wallet; stop means is integrated in hinge; a key retaining or connection means (in here also called "chain"), preferably to engage the aperture in the grip of the key (the "grip" means the part of the key which is held between thumb and indexing finger if the key is inserted in the key hole), 20 e.g. comprising a key ring or loop and/or a flexible tension member, e.g. chain, which carries the keys; chain length at least 50 or 75% of holder length; at least one chain end temporary fixed, e.g. by snap fit, to the housing, e.g. to add or remove a key or for safety (e.g. in case of an accident; 25 chain length at least 25 or 50% or 75% or 100% longer than shortest distance between its to the holder anchored ends; a chain end anchored to a panel edge, preferably a short edge, e.g. approximately midway; a chain end anchored at or near the pivot; each chain end anchored to a proper panel; single chain 30 carries all keys; elastic or non elastic chain; elastic expandable storage space, e.g. at least 50% or 100% or 150% expansion of the thickness; storage space boundary provided by holder external wall, e.g. skin; expansion of storage space provides equal expansion of holder volume; panels mutually 35 engaged by hooking parts at the pivoting edge of both panels; pivoting edges of panels pressed against each other by bias of skin; panels loose laying against each other at pivoting

edge; panel edges at pivot have mutual form fit; panel edges at pivot can be immediately moved from each other against skin bias; pivoting shell halves providing panels; in the closed position at least one side provides a gap of at least 2 or 3 5 or 4 or 5 millimeter, preferably one or two sides at the most provides such gap, preferably for substantially or at least 50 or 75% its complete length; a short side provides the gap; operating button for unlocking the shell halves near or at a corner or midway an edge length and/or at a long or short edge; 10 operating button located between and/or projecting outward from between panels; operating button externally accessible while wallet closed; operating means, e.g. button actuates lock release, preferably provides translating movement of lock part; transmission means associated with operating button to actuate 15 lock; button operated by pushing or turning action, e.g. of finger or thumb of user; translating or turning button; opening angle limited to less than 120 or 110 or 100 or 90 or 80 or 70 degrees, preferably by limiting or stop means, e.g. at the pivot; opening angle at least 45 or 60 degrees; skin provides 20 elastic force to resiliently open the holder by pivoting from the closed position, provides at least 80 or 90 or 95% of the surface area of one or both main faces of the holder and/or keeps the panels in biased engagement; skin attached by e.g. clinching or clamping, preferably to frame at preferably a 25 single edge of a panel; skin, preferably merely, anchored to frame at opposite edges, preferably both long edges or edges parallel to pivot axis; pivot comprises an inner partly cylindrical wall at pivot edge at the one panel tightly nested within an outer part cylindrical wall at pivot edge at the other 30 panel, said partly cylindrical walls slidingly engage mutually in the pivot direction; the outer cylindrical wall has a stop edge associated with a stop edge at the inner cylindrical wall to limit pivoting towards the open position; skin provides a, preferably loose, envelope or hull or wrapping of the holder; 35 skin pre tensioned or pulled tight in open and/or closed position of wallet; skin pre tensioned or pulled tight in open position at least 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9

or 10% yield; skin provides external surface; lock provides rigid and/or internal locking; lock is provided internal; lock holds opposite edges fixed or rigidly against bias to the wallet open position; lock is releasable by releasing means,
5 preferably operated by operating means, e.g. through transmission means; lock provides mutually engaging snapping and/or hooking parts in the closed position; locking parts are provided at both panels, preferably at an outer edge, preferably long edge, preferably midway; in the closed position the shell
10 halves are one or more of: stacked onto each other, located right above each other, parallel to each other, keep the wallet closed; the skin covers the complete external surface of the two wallet main faces; if closed the wallet comprises two external, opposite main faces spaced by the wallet thickness;
15 thickness can be resiliently or elastically expanded to at least two or three or four times the original thickness; a releasable lock to selectively keep the wallet closed, preferably of internal type; in closed, unloaded condition an elongated, flat walled, sleeve like shape; the two panels are merely mutually
20 connected at the spine; the two panels mutually connected along one edge and are mutually free along the other three edges; in closed and/or open condition its inside is accessible through three sides and not through the fourth side; the edges at the short minor faces are merely mutually connected at the pivot;
25 at least one of the edges that move away from each other while the wallet opens, have towards each other extending parts, e.g. to provide attachments means for the skin (e.g. to clinch the skin).

For the key retention means of the wallet, e.g. the chain,
30 one or more of the following applies: holds preferably at least two, three, four, five or six keys; can move, preferably free, e.g. by virtue of gravity or movement of the wallet, between a retracted position, in which the associated keys are stored within the wallet, and an extended position, in which one or
35 more of the associated keys are external from the wallet and possibly one or more other associated keys are stored within the wallet; in the extended position at least part of the chain,

e.g. at least 20 or 30 or 60 or 80% of it, projects outside the wallet; in the retracted position the chain is completely within the wallet or not more than 5 or 10% of it is outside the wallet; is hingedly connected to the wallet for the movement
5 between extended and retracted position; attached to the housing; elongated; merely a single connection point with the housing; comprises a rigid elongated member, e.g. rod.

The wallet preferably is provided by two opposite main faces, two opposite long minor faces and two opposite short
10 minor faces, wherein the minor faces provide the wallet thickness. A long minor face meets a short minor face at an angle of 90 degrees. Preferably, if closed, the long minor faces are tight such that they do not allow a key to pass and/or one or both the short minor faces delimit an opening for a key to
15 pass.

The attached drawing illustrates presently preferred embodiments without limiting the scope of protection, showing in:

Fig. 1 and 2 the closed wallet from the opposite sides,
20 in perspective view;

Fig. 3 and 4 the open wallet from the opposite sides, in perspective view, and associated chained key presented;

Fig. 5 the closed wallet in the view similar to fig. 4, and associated chained key presented;

25 Fig. 6 an exploded perspective view, skin removed, of the main components of the wallet, in closed position;

Fig. 7 an end view of the wallet shown in fig. 1;

Fig. 8 a sectional view of the wallet shown in fig. 1;

Fig. 9 an exploded perspective view of the space frames
30 of the pivoting panels, in open position;

Fig. 10 a sectional view of the assembled space frames, in closed position;

Fig. 11 detail F of fig. 10 (scale 5 to 1);

Fig. 12 a sectional view of the assembled space frame,
35 in open position;

Fig. 13 detail F of fig. 12 (scale 5 to 1);

Fig. 14-16 successive steps during assembly of the wallet in sectional view;

Fig. 17 a perspective view of the completed wallet; and Fig. 18 an embodiment of the skin.

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Meaning of the reference signs: wallet 1, key 2, aperture 3 in key grip, operating button 4 of lock, main face or side 5, chain 6, space frame 7, latch 8 of lock, quick connector 9 of chain 6, hooks 10 of lock, spine or pivot 11, foil 12 (also called membrane or skin), clinch edge 13, stop 14 limiting the opening angle, window 15 inside the space frame 7.

Fig. 1-8 show the two space frames, the outer envelope of rubber like foil material, also called skin, the operating button associated with the lock, the key chain, a key, the quick connector associated with the one chain end.

In the closed wallet position, see e.g. fig. 1, the longitudinal edges of the superposed panels distal from the pivot axis are near each other while in the open wallet position, see e.g. fig. 3, these edges are moved away from each other. Also if the closed wallet is packed with keys such that the main faces bulge outwardly, these distal edges are kept in the position shown in fig. 1 by the rigid hooking parts of the internal lock.

The wallet is provided by two opposite main faces, two opposite long sides and two opposite short sides. A long side meets a short side at an angle of 90 degrees. If closed, the long sides are tight such that they do not allow a key to pass, however the short sides delimit an opening for a key to pass.

Fig. 9 provides details of the pivoting edges of the panels and of the opposite edges to which the skin is clinched. Compared to fig. 6 the features of the lock are absent and the pivoting edges are designed differently.

Fig. 10-13 provide details of the form fit of the pivot edges and associated stop elements to limit the opening angle. The skin is absent.

Fig. 14 shows the skin clinched to both panel edges and by turning the panels according to the arrows, the position of fig. 15 is obtained. Starting from fig. 15, by turning the panels according to the arrows, the position of fig. 16 is
5 obtained, in which the pivot edges are engaged by form fit and biased in engagement by the permanently stretched envelope.

Fig. 17 schematically illustrates the skin providing an envelope for the wallet, shown in closed position, and discontinued along the line where the distal panel edges meet.

10 Fig. 18 shows a skin made from two material types. The central strip is elastic, thus highly resiliently stretchable, and the fields at both sides are from natural leather, thus substantially stretch free. The elastic central strip will be registered with the pivot axis of the wallet. If applied to
15 the wallet of fig. 17, the seam between the central strip and a natural leather field could be located at the dotted line.

The drawing illustrates both panels providing part of the means for hinged connection. Alternatively a living hinge is feasible, or one of the panels provides substantially the hinge,
20 e.g. as a spine. The lock could comprise magnetic means.

The drawing, the specification and claims contain many features in combination. The skilled person will consider these also individually and combine them to further embodiments. Also different embodiments belong to the invention. Features of
25 different in here disclosed embodiments can in different manners be combined and different aspects of some features are regarded mutually exchangeable. All described or in the drawing disclosed features provide as such or in arbitrary combination the subject matter of the invention, also independent from their
30 arrangement in the claims or their referral.