United States Patent [19]

Jahn

[11] **3,834,824**

[45] **Sept. 10, 1974**

[54] **RETAINING MEANS**

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[21] Appl. No.: **289,820**

[52] **U.S. Cl.** ..... **402/13,** 24/16 PB
[51] **Int. Cl.** **B42f 13/02**
[58] **Field of Search** ..... 402/8, 13, 14, 15, 18; 24/16 PB; 40/21 R, 302

[56] **References Cited**

UNITED STATES PATENTS

2,468,355	4/1969	Ambler	402/15
2,559,556	7/1951	Ambler	402/15
3,318,354	5/1967	Borisof	24/16 PB X
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FOREIGN PATENTS OR APPLICATIONS

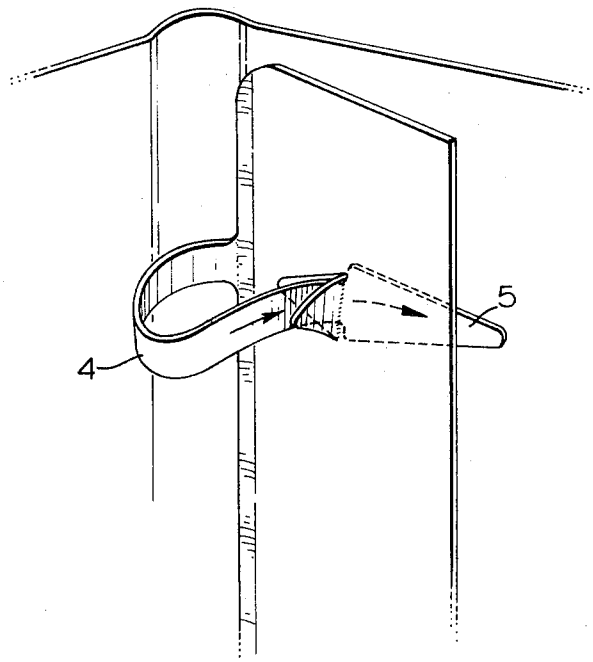
1,309,873	10/1962	France	24/16 PB

Primary Examiner—William H. Grieb

[57] **ABSTRACT**

The invention is a retaining means used to retain discrete articles thereon and in particular is adaptable to be used as a loose leaf binder to retain paper in a simple and inexpensive manner, and comprises a backing and fastening means, each fastening means comprising a thin narrow bendable strap and a tab on one end thereof forming a continuation of the plane of the adjacent strap and of a width at the juncture with the strap to define therewith at least one locking shoulder, the tab and strap having an appreciable measure of stiffness to resist buckling under force applied to the edges thereof substantially in the plane thereof, the backing having a tab receiving and co-operating slot through which the tab can be inserted to lock the at least one shoulder behind the backing to resist withdrawal until sufficient force is exerted to buckle the tab out of its planar configuration when the strap is pulled in the reverse direction.

12 Claims, 13 Drawing Figures



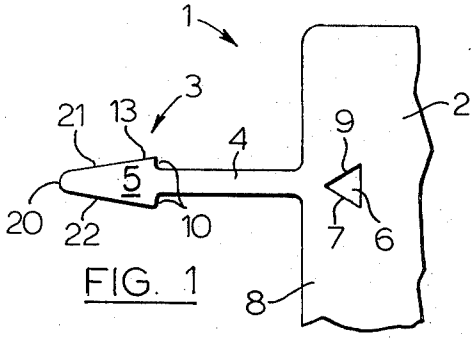


FIG. 1

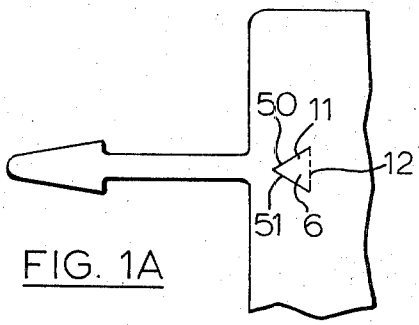


FIG. 1A

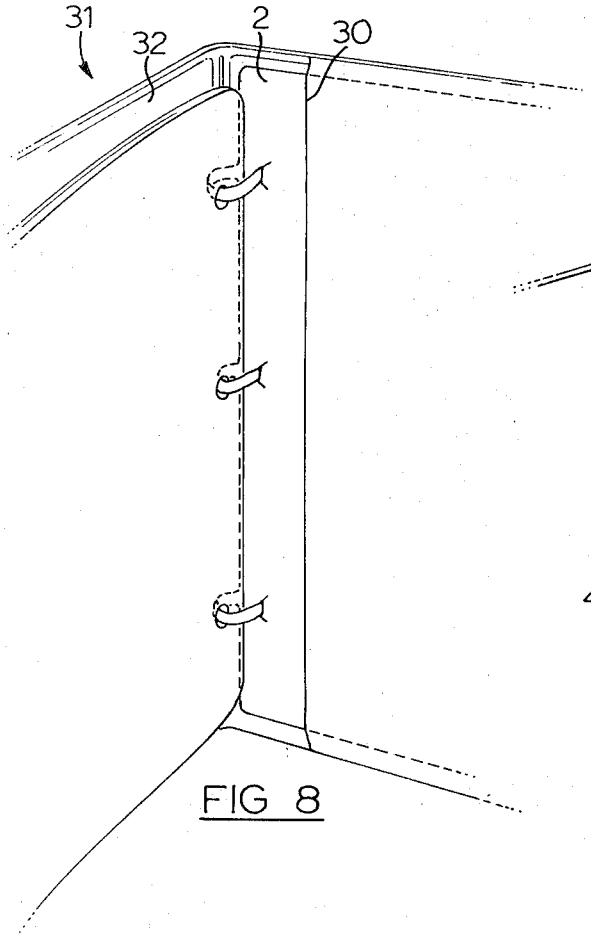
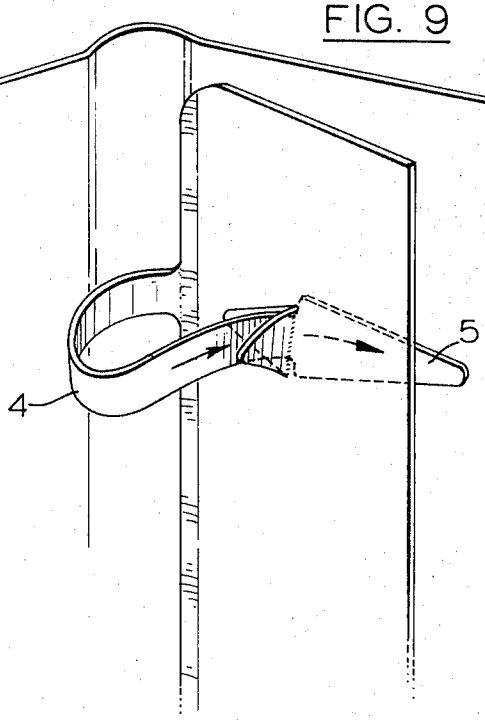


FIG 8

FIG. 9



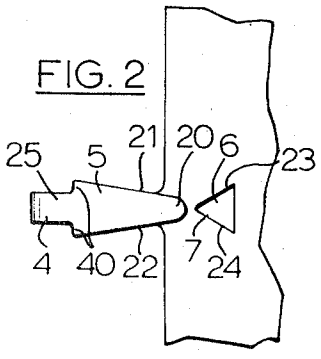


FIG. 2

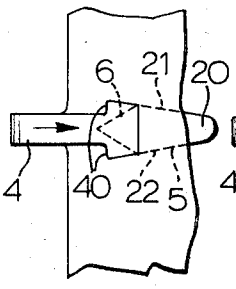


FIG. 3

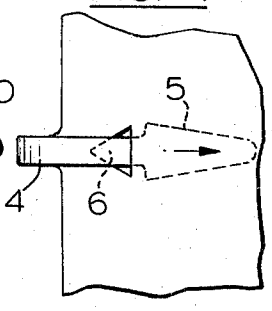


FIG. 4

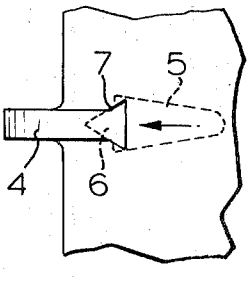


FIG. 5

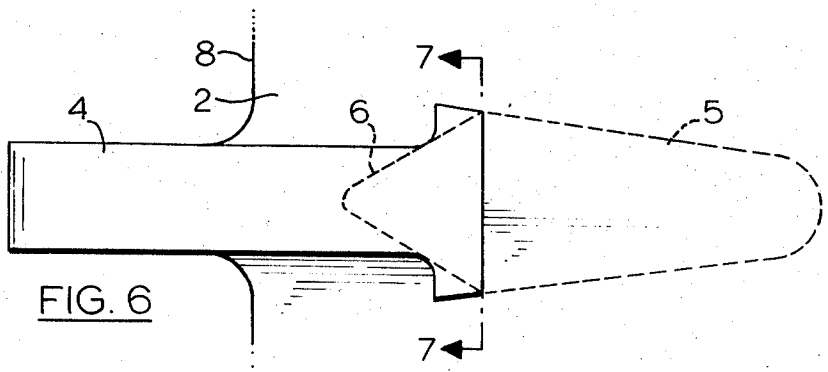


FIG. 6

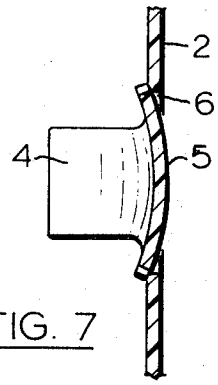


FIG. 7

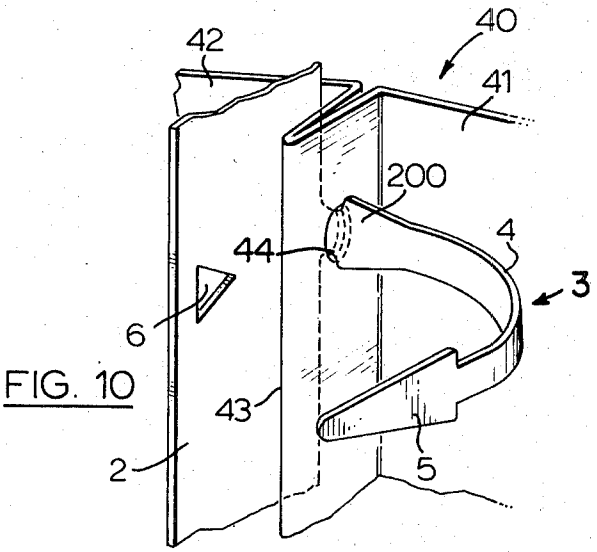


FIG. 10

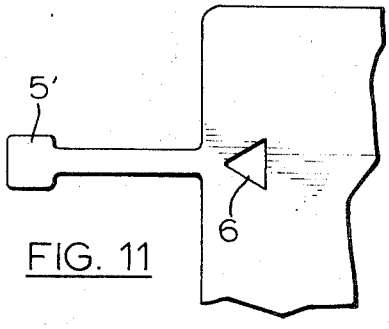


FIG. 11

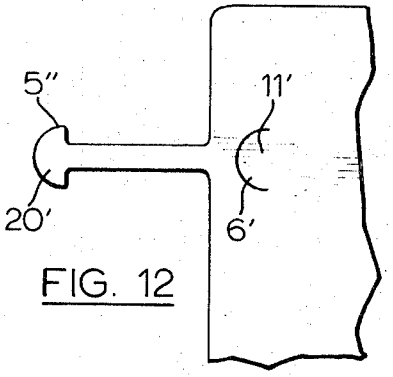


FIG. 12

RETAINING MEANS

FIELD OF INVENTION

This invention relates to improvements in retaining means. In particular, this invention may be adapted to be used as a binding means to accommodate loose leaf paper and the like, retaining said material in a simple, economical and efficient manner.

Today, most articles are constructed and manufactured for the convenience of the consumer, it being desirable that the article be both highly versatile and inexpensive. In particular, most manufactures are turning to plastics material with their highly versatile characteristics to overcome problems of prior constructions.

Loose leaf binders have in the past been very awkward, being bulky, especially those comprising three metallic rings mounted between two covers, and opening intermediate the mounting means, the opening of said rings being difficult, requiring, at times, considerable force. Refinements were attempted by the industry, utilizing for example, plastics material, but these refinements, though they limited the size of the binder, did not overcome the problems of securely locking and retaining the material. In particular, many locking arrangements utilized tab and slot means but to date have been unsatisfactory. For example, U.S. Pat. No. 3,506,370 provided a retainer having locking means comprising a long strap having an enlarged tap at the end thereof, the strap being initially inserted and pulled through the slot, by the end opposed the end on which the tab is disposed, until the tab engages behind the backing thus preventing further penetration of the strap through the slot. The strap, after the material was disposed thereon, was then wrapped around the backing, at the side nearest the slot, and the material and brought over the tab to be inserted through the same slot. Additionally, the strap and tab fastening means was separate from the backing, which if lost, required replacement. Other prior art attempted to lock the material on the retainer utilizing a tab-slot locking arrangement by inserting the tab through a slot. The tab, which was larger than the slot, was slit in the middle so that it could be folded (e.g., U.S. Pat. No. 2,559,556.), or was folded near its outer edges (e.g., U.S. Pat. No. 2,468,355) to minimize its width to be less than the width of the uniform slot through which it was then threaded. The tab strap arrangement was then threaded through further slot means which provided secondary security to ensure a continuing locking arrangement until it was released.

It is therefore an object of this invention to provide a retainer providing locking means which of itself provides an effective lock at all times yet is simple to operate.

It is a further object of this invention to provide a retainer at minimal cost.

It is still a further object of the invention to provide locking means in a retainer which is rugged, enduring through prolonged use and reuse.

The above and other objects and features of advantages of retaining means of this invention will appear from the following summary of the invention and more detailed description thereof.

SUMMARY OF THE INVENTION

According to the invention, a retainer is provided constructed preferably from a plastics material, for example, of soft vinyl or polyethylene comprising a backing and fastening means. Each fastening means comprises a thin, narrow, bendable strap having a tab at the end thereof forming a continuation of the plane of the adjacent strap portion and of a width at the juncture with the strap to define therewith at least one locking shoulder and preferably a pair of locking shoulders, the tab and strap having an appreciable measure of stiffness to resist buckling under force applied to the edges thereof substantially in the plane thereof and the backing has a tab receiving slot through which the tab can be inserted to lock the shoulders behind the backing. In the preferred embodiment the slot is non-uniform in width. On presentation of the tab to the slot, in the preferred embodiment, with the plane of the tab transverse the width of the slot, the tab, on being pushed into the slot, and penetrating same, will co-operate with the sides of the slot to seek a wider slot portion for insertion of the tab therethrough and on the strap being pulled in the reverse direction, the tab will be moved to a narrower portion of the slot to locate the at least one locking shoulder and preferably the pair of locking shoulders of the tab behind the backing to prevent tab removal until sufficient force is exerted to buckle the tab out of its planar configuration.

To further facilitate the insertion of the tab through the slot a flap is provided coincident with the covering the slot, also preferably of non-uniform width, whereby when the tab is presented to the slot under the forwardmost portion of the flap, with the plane of the tab transverse the width of the slot, the flap co-operates with the tab deflecting it down through the slot while at the same time facilitating the tab's seeking of a wider portion of the slot for insertion therethrough. When the tab is fully inserted and the strap is pulled in the reverse direction, the flap further facilitates the locking of the tab behind the backing by deflecting the tab as it passes behind the backing to the narrow portion where the at least one shoulder and preferably the pair of shoulders and, thus the tab, are locked.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a plan view of the preferred embodiment of the invention, the slot being fully cut out, a portion of the backing being cut away.

FIG. **1A** is a plan view of a modification of the preferred embodiment illustrated in FIG. **1** wherein the slot is not fully cut out, leaving a flap portion coincident with and covering the slot.

FIG. **2** to **7** inclusive illustrate the preferred method, utilizing the preferred embodiment of the invention, illustrated in FIG. **1**, of inserting and locking the tab through the slot.

FIG. **8** is a perspective view of loose leaf paper bound utilizing the invention, the backing have been inserted in a pocket of a presentation folder.

FIG. **9** is a perspective view of retaining means according to the invention secured between two covers to retain loose leaf paper.

FIG. **10** illustrates a further embodiment of retaining means secured between two covers of a binder.

FIG. **11** illustrates a further embodiment of the invention.

FIG. 12 illustrates a still further embodiment of the invention.

DETAILED DESCRIPTION OF THE DRAWINGS

Referring particularly to FIG. 1, it will be seen that according to the preferred embodiment of the invention, a retaining means, which preferably comprises a plastics material, for example, soft vinyl or polyethylene, generally denoted as 1, comprises backing 2 having at least one fastening means generally denoted as 3, extending from one peripheral edge thereof, each fastening means comprising a thin narrow bendable strap 4 having a tab 5 at the end thereof, forming a continuation of the plane of the strap portion and of a width at the juncture with the strap to define therewith at least one locking shoulder in the preferred embodiment a pair of locking shoulders 10, the tab 5 and strap 4 having an appreciable measure of stiffness to resist buckling under force applied to the edges thereof substantially in the plane thereof. In the preferred embodiment the tab 5 takes on the peripheral configuration of an arrowhead, although it may comprise any other suitable peripheral configuration, as, for example, a semicircle or a semiellipse. In the preferred embodiment, the slot 6 is of non uniform width being generally triangular in shape, and made by die cutting a triangular portion of the material from said backing 2, in this instance, formed having narrow portion indicated generally at 7 being disposed nearer the peripheral edge 8 of backing 2 from which the strap 4 extends than a broader or wider portion generally indicated at 9. Preferably, the broadest portion of the tab is about 5 percent broader or wider than the broadest portion of slot 6.

In a modification to the preferred embodiment illustrated in FIG. 1A, slot 6 is formed as by die cutting along lines 50 and 51, which in effect, forms a closure flap 11 hinged about the dotted line 12, such that when the flap 11 is folded back about dotted line 12, slot 6 is exposed through which the tab may be inserted. FIGS. 2 through 7 inclusive illustrate the preferred method of inserting and locking the tab through the slot 6 according to the invention. In this connection, it will be appreciated that the material, and in particular, after loose leaf paper or other material, for example, house keys (not shown) has been disposed on the strap, the tab is presented to the slot, the strap being oriented to register with the slot, with the plane of the tab transverse the width of the slot. The leading edge 20 of tab 5 which is preferably of a width less than the widest portion 9 of the slot 6 is then presented to the slot generally at narrow portion 7. As the tab is pushed into the slot, the peripheral side walls of the tab 21 and 22, which diverge from the forwardmost position 20 to a broader portion 40, co-operate with the diverging walls 23 and 25 of the slot 6 to seek a wider slot portion 9 which will permit penetration by the maximum width of the tab 4. However, since it is preferable that the maximum width of the tab be about 5% broader than the widest or broadest portion of the slot, portion 25 of the tab 5 remains outside the slot when that portion of the tab 4, equal in width to the widest portion 9 of the slot 6, engages the side walls 23 and 24 at the slot's widest portion 9, shown in FIG. 3. Thereafter, as the tab is pushed further into the slot, since tab portion 25 is now wider than the maximum slot width at 9, the tab buckles or flexes transversely, shown in close up in FIG. 6 and in cross section in FIG. 7. To assist the pushing of the remainder 25 of the tab 5 through the slot 6, the strap has an appreciable measure of stiffness to resist buckling under the force applied to it, as the tab is pushed through the slot.

Having been pushed fully through the slot, as illustrated in FIG. 4, the tab is then pulled in the reverse direction, by pulling the strap 5. As a result, the tab is moved behind the backing to a narrower portion of the slot to locate the at least one locking shoulder and in the preferred embodiment, the locking shoulders 10 behind the backing and as illustrated in FIG. 5, engages the narrow portion 7 of the slot 6 to prevent tab removal without sufficient force being exerted to buckle the tab out of its planar configuration.

To further facilitate the insertion of the tab through the slot, flap 11, illustrated in FIG. 1A; is provided of non uniform width coincident with and covering slot 6 to facilitate the insertion of the tab through the slot. When the leading edge or forwardmost portion 20 of the tab 4 is pushed under the flap 11, the flap tends to deflect or force the tab downward to seek the widest portion of the slot through which the tab may pass. Upon the tab being fully inserted through the slot and the strap being pulled in the reverse direction, the flap 11 assists in deflecting the tab 4 out of the plane of the backing to the rear thereof to ensure that the at least one locking shoulder and the preferably pair of locking shoulders will properly engage behind the backing.

As indicated, preferably the maximum width of the tab is about 5 percent greater in width than the broadest portion of the slot. If the width of the tab is much greater, a greater force is required to push the tab through the slot which tends to tear the backing adjacent the slot's widest portion and buckle the strap. In addition, the tab, if pushed through the slot, may become excessively distorted and will not restore to its original planar configuration. If, however, the tab is narrower than the slot, its maximum width being about equal to the maximum width of the slot, the invention will work satisfactorily.

To give the necessary stiffness or rigidity, the invention may utilize for example, two layers of 10 gauge material, which may comprise polyethylene or vinyl to give the proper rigidity and resiliency necessary for the purposes of the invention.

FIG. 8 illustrates the use of the invention as a loose leaf binder, the paper being disposed on straps, for example, on the strap 4. Backing 2 is disposed in pocket 30 of presentation folder 31, the closing of cover 32 onto cover 33, having no effect upon the disposition of the material within the presentation folder. Unlike the three ringed binder known in the art, when the covers are closed, the paper disposed therein effectively moves along the rings closer to the outer peripheral edge of the binder covers, this invention provides that the bound pages of loose leaf material remain fully contained within the peripheral edges of the covers 32 and 33 at all times. Further, the backing may be disposed in folders by other means, for example, heat sealing the backing to one cover as illustrated in FIG. 9 which will retain the paper in the same manner.

FIG. 10 illustrates a further embodiment of the invention. Each fastening means 3 is modified, strap 4 being modified to have an enlarged portion 200 intermediate tab means 5 and backing 2, preferably adjacent backing 2, to secure said backing to folder 40. Folder 40 comprises two covers 41 and 42, adapted to

have portion **43** intermediate said two covers, and has, for convenience of illustration, one aperture **44** only, therethrough, through which strap **4** and tab **5** are inserted. When fully through said aperture **44**, strap **4** is fixed or locked in position, since enlarged portion **200** is wider than the widest portion of aperture **44**, to accommodate for example, loose leaf paper which may then be secured in the folder as hereinbefore described.

In addition, it is readily apparent that another embodiment of the invention may comprise strap means extending from the periphery of a first backing or cover to be inserted through a slot disposed in a second backing, as hereinbefore described, after, for example, loose leaf paper has been inserted thereon.

FIGS. **11** and **12** illustrate further embodiments of the invention. In FIG. **11** tab **5'** comprises a rectangle of material instead of being triangular in peripheral configuration. Since tab **5'** is not tapered, the maximum width of the tab is preferably less than the maximum width of the slot otherwise the tab must be distorted before it may be pushed through the slot. In FIG. **12** tab **5''** has a semi-circular peripheral configuration as does the slot **6'** and flap **11'**. Since tab **5''** has a narrow portion or leading edge **20'**, which is of a lesser width than the maximum width of the slot, the broadest portion of the tab may be, and preferably is **5** percent greater than the broadest or widest portion of the slot.

As many changes could be made in carrying out the above constructions without departing from the scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense. I claim:

1. In combination a backing and fastening means each fastening means comprising a thin, narrow, bendable strap, having a tab at the end thereof, forming a continuation of the plane of the adjacent strap portion and of a width at the juncture with the strap to define therewith a pair of locking shoulders, the tab and strap having an appreciable measure of stiffness to resist buckling under force applied to the edges thereof, substantially in the plane thereof; the backing having a tab-receiving slot therethrough of non-uniform width, at least a portion of said slot diverging from a narrow portion to a wider portion, the wider portion being of a width at least wide enough to accept the tab therethrough with minimum buckling of the tab out of its planar configuration, the arrangement being such that on presentation of the tab to the slot by pushing the strap towards the slot in the direction of the divergence of said slot from said narrow portion to said wider portion with the plane of the tab transverse the width of the slot, the tab on being pushed into the slot by the strap at said narrow portion will first co-operate with the divergent side walls of the slot between said narrow portion and said wider portion to seek the wider slot portion and under further pushing the tab will thereupon resiliently buckle out of its planarconfiguration sufficiently to pass through the slot and thereupon recover to its planar configuration with its shoulders located behind the backing in a minimum locking position, the strap being maintained substantially planer at all times when the tab is inserted into said slot, the strap on being pulled in the reverse direction will return the tab in the direction of the converging sides of said slot from said wider portion to the said narrower portion, to locate the locking shoulders of the tab behind the backing in a maximum locking position to prevent tab removal therefrom until sufficient force is exerted to buckle the tab out of its planar configuration to a degree substantially greater than the buckling required for insertion of the tab through the slot.

2. The combination as claimed in claim **1** wherein said strap is carried by said bucking and is adapted to register with said slot.

3. The combination as claimed in claim **2** wherein said tab is tapered from a broadest portion adjacent said locking shoulders, to a narrow forwardmost portion and said slot is tapered from a widest portion to a narrow portion nearer the peripheral edge of said backing at which the strap is adapted to extend.

4. The combination as claimed in claim **3** wherein the width of said broadest portion of said tab is about **5%** greater than the width of the wider portion of said slot.

5. The combination as claimed in claim **3** wherein said backing and fastening means comprises a plastics material.

6. The combination as claimed in claim **3** wherein the shape of said slot is selected from the group of an arrowhead, semi-circle or semi-ellipse and the peripheral configuration of said tab is selected from the group of an arrowhead, semi-ellipse or semi-circle.

7. In combination a backing and fastening means, each fastening means comprising a thin, narrow, bendable strap, having a tab at the end thereof, forming a continuation of the plane of the adjacent strap portion and of a width at the juncture with the strap to define therewith a pair of locking shoulders, the tab and strap having an appreciable measure of stiffness to resist buckling under force applied to the edges thereof, substantially in the plane thereof; the backing having a cut therethrough defining a flap coincident with, and covering, a tab receiving slot of non-uniform width, at least a portion of said slot and said flap diverging from a narrow portion to a wider portion, the wider portion being of a width at least wide enough to accept the tap therethrough with minimum buckling of the tab out of its planar configuration, the arrangement being such that on presentation of the tab by pushing the strap towards the slot beneath the flap in the direction of the divergence of said flap and slot from said narrow portion to said wider portion, with the plane of the tab transverse the width of the slot, the tab on being pushed beneath the flap into the slot by the strap at said narrow portion, will first cooperate with the undersurface of the flap and the divergent side walls of the slot between said narrow portion and said wider portion, to seek a wider slot portion and under further pushing the tab will thereupon resiliently buckle out of its planar configuration sufficiently to pass through the slot and thereupon recover to its planar configuration with its shoulders located behind the backing in a minimum locking position, the strap being maintained substantially planar at all times when the tab is inserted into said slot, the strap on being pulled in the reverse direction will return the tab, deflected by the flap, in the direction of the converging sides of said slot from said wider portion to said narrow portion to locate the locking shoulders behind the backing in a maximum locking position to prevent tab removal therefrom until stufficient force is exerted to buckle the tab out of its planar configuration to a de-

gree substantially greater than the buckling required for insertion of the tab through the slot.

8. The combination as claimed in claim **7** wherein said strap is carried by said backing and is adapted to register with said slot.

9. The combination as claimed in claim **8** wherein said tab is tapered from a broadest portion adjacent said locking shoulders to a narrow forwardmost portion and said slot is tapered from a widest portion to a narrow portion nearer the peripheral edge of said backing at which the strap is adapted to extend.

10. The combination as claimed in claim **9** wherein the width of said broadest portion is about 5 percent greater than the width of the wider portion of said flap and slot.

11. The combination as claimed in claim **9** wherein said backing and fastening means comprises a plastics.

12. The combination as claimed in claim **9** wherein the shape of said slot and flap is selected from the group of an arrowhead, semi-circle or semi-ellipse and the peripheral configuration of said tab is selected from the group of an arrowhead, semi-ellipse or semi-circle.

* * * * *