

Description

The present invention relates to a buckle for releasably connecting loose ends of an article such as a belt or strap applied to garments.

Japanese Utility Model Laid-open Publication No. 59-31908 discloses, as reillustrated here in Figures 15 and 16, a buckle according to the prior art portion of Claim 1 including a male member A and a female member B releasably couplable together through an inter-locking engagement between a pair of resilient legs C of the male member A and a socket portion of the female member B. The female member B includes a pair of resilient arms D, D disposed on opposite sides of the socket portion and resiliently flexible toward each other to urge the legs C, C out of interlocking engagement with the socket portion for uncoupling the male and female members A, B. The female member further includes a pair of stopper lugs E, E disposed outwardly of the distal ends of the respective arms. The stopper lugs E, E are engageable with the arm's distal ends to limit the lateral movement of the arms D, D, thereby preventing the arms D, D from being broken when they are spread away from one another. The female member B has no means for preventing the arm D, D from moving in a direction perpendicular to the general plane of the female member B with the result that the arms D, D are likely to be broken when subjected to forces applied thereto in said direction. Another drawback associated with the prior buckle is in that the legs C, C have a varying width progressively reducing from the distal ends toward the proximal ends thereof for increasing the resiliency of the legs C, C. Due to such varying width, the legs are likely to be broken at the proximal ends during frequent coupling and uncoupling operations of the buckle.

The present invention seeks to provide a buckle in which resilient arms of a female member are protected from damage or breakage when subjected to lateral pulling forces tending to spread the arms as well as to forces applied to the arms in a direction perpendicular to the general plane of the female member.

According to the present invention, there is provided a buckle for fastening end portions of an article, comprising: a male member adapted to be connected to one of the end portions and including a pair of resiliently flexible legs having a pair of abutment surfaces; and a female member adapted to be connected to the other end portion and including a socket portion releasably couplable with said legs, said socket portion including a pair of opposed plates and a pair of spaced guide walls extending from an inner surface of one of said plates toward the other plate so as to define therebetween a slot for receiving therein said legs, said guide walls having a pair of retaining surfaces respectively engageable with said abutment surfaces of said legs, said socket portion further including a pair of cantilevered resilient arms having at distal ends thereof a pair of actuating lugs extending toward each other and engageable

with said legs, characterized in that said socket portion further includes a pair of lateral grooves disposed on opposite sides of and outside said slot and defined by and between said plates and said guide walls, said actuating lugs of said arms being disposed respectively in said lateral grooves, and that one of said plates has a pair of recessed portions facing said lateral grooves, respectively, said arms having a pair of stop fingers respectively disposed on said actuating lugs and projecting therefrom into said recessed portions of said one plate.

Particular embodiments of the invention are set out in dependent Claims 2-11.

Many other advantages and features of the present invention will become manifest to those versed in the art upon making reference to the detailed description and the accompanying sheets of drawings in which preferred structural embodiments incorporating the principles of the present invention are shown by way of illustrative example.

Figure 1 is a plan view of a male or plug member which constitutes one part of a buckle embodying the present invention;

Figure 2 is a cross-sectional view taken along line II-II of Figure 1;

Figure 3 is an end elevational view of Figure 1;

Figure 4 is a plan view of a female or socket member which constitutes the other part of the buckle;

Figure 5 is a side elevational view of Figure 4;

Figure 6 is an end elevational view of Figure 4;

Figure 7 is a cross-sectional view taken along line VII-VII of Figure 4;

Figure 8 is a cross-sectional view taken along line VIII-VIII of Figure 6;

Figure 9 is a plan view of the male and female members of the buckle shown engaged or connected;

Figure 10 is a horizontal cross-sectional view of Figure 9;

Figure 11 is a plan view of a modified male member;

Figure 12 is a horizontal cross-sectional view of a buckle having the male member shown in Figure 11;

Figure 13 is a plan view of another modified male member;

Figure 14 is a horizontal cross-sectional view of a buckle having the male member shown in Figure 13;

Figure 15 is a schematic plan view of a known buckle; and

Figure 16 is a horizontal cross-sectional view of the known buckle shown in Figure 15.

The principles of the present invention are particularly useful when embodied in a buckle as shown in Figure 10, generally indicated by the numeral 20. The buckle 20 comprises a male or plug member 21 and a female or socket member 22 releasably coupled with the male member 21.

As better shown in Figure 1, the male member 21 includes a hollow connector frame 23 of a rectangular shape, and a pair of resiliently flexible

legs 24, 24 integrally formed with the hollow connector frame 23. The connector frame 23 and the legs 24, 24 are integrally molded of synthetic resin, such as polyacetal, nylon or polypropylene.

The hollow connector frame 23 comprises a base 25, a pair of spaced parallel stem 26, 27 extending transversely from opposite ends of the base 25, a connecting bar 28 transversely joining the stems 26, 27 at distal ends thereof remote from the base 25, and a crossbar 29 extending between the stems 26, 27 parallel to the base 25 for retaining thereon a loop of one strap end portion S1 (Figure 10).

The legs 24, 24 extend from the base 25 away from the connecting bar 28 and have a pair of locking projections 30, 30 projecting from the distal ends thereof laterally away from one another. Each of the legs 24, 24 has a longitudinal reinforcing fin 31 projecting from an inner side-wall thereof away from the locking projection 30. The locking projections have a pair of abutment surfaces 32, 32, respectively, facing toward the base 25, and a pair of sliding surfaces 33, 33 extending respectively from the abutment surfaces 32, 32 convergently toward the distal ends of the respective legs 24, 24.

The female member 22, as shown in Figures 4 to 8, includes a hollow connector frame 34 of a rectangular shape, and a socket portion 35 integrally formed with the hollow connector frame 34 for receiving therein the legs 24 of the male member 21 (Figure 1). The connector frame 34 and the socket portion 35 are molded of synthetic resin, such as polyacetal, nylon or polypropylene.

The hollow connector frame 34 comprises a base 36, a pair of spaced parallel stems 37, 38 extending from opposite ends of the base 36, and a connecting bar 39 joining the ends of the stems 37, 38 which are remote from the base 36. Another strap end portion S2 (Figure 9) is attached to the connector frame 34 with a loop extending around the connecting bar 39. The connector frame 34 may have the same structure as the connector frame 23 of the male member 21.

The socket portion 35 includes a pair of opposed top and bottom plates 40, 41 of a rectangular shape extending from the base 36 away from the connecting bar 39, and a pair of spaced guide walls 42, 43 projecting from an inner surface of the bottom plate 41 and extending longitudinally of the top and bottom plates 40, 41 so as to define therebetween a central slot 44 and a pair of lateral grooves 45, 45 disposed one on each side of the slot 44 (Figure 6). The socket portion 35 further includes a central partition wall 46 interconnecting the top and bottom walls 40, 41 and separating the central slot 44 into two slot portions 44a, 44b (Figures 6-8) for receiving respectively therein the legs 24 of the male member 21. The partition wall 46 joined at one end thereof with the base 36 of the connector frame 34. As shown in Figure 8, the guide walls 42, 43 are spaced equidistantly therefrom and have a pair of opposed inner guide surfaces 42a, 43a extending substantially parallel to the partition wall 46, and

a pair of retaining surfaces 42b, 43b blending into the respective inner guide surfaces 42a, 43a and facing toward the base 36.

The socket portion 35 also includes a pair of cantilevered resilient arms 47, 47 disposed respectively in the lateral grooves 45, 45 (Figures 6 and 7). The arms 47, 47 have respective proximal ends connected with the top and bottom plates 40, 41 at one end of the latter which is remote from the base 36. The arms 47, 47 extend toward the base 36 along opposite longitudinal edges of each plate 40, 41 and terminate short of the base 36. The arms 47, 47 have respective distal ends disposed adjacent to the retaining surfaces 42b, 43b of the guide walls 42, 43.

Each of the resilient arms 47, 47 has an integral enlarged finger grip 48 disposed on the distal end thereof and projecting transversely outwardly from the lateral groove 45. The arm 47 further has an actuating lug 49 disposed on the distal end thereof and projecting therefrom toward the central partition wall 46, the actuating lug 49 terminating short of the central slot 44, as shown in Figure 8. The actuating lug 49 includes an integral stop finger 50 projecting perpendicular to the general plane of the socket portion 35 and loosely received in a recessed portion 51 of the bottom plate 41, as shown in Figure 7. The recessed portion 51 comprises an aperture communicating with both the slot 44 and the lateral groove 45 for allowing only a limited lateral movement of the stop finger 50. The aperture 51 may be provided in the top plate 40 which constitutes an obverse side of the buckle 20, however, it is not preferred to do so because the aperture 51 is visible from the outside and hence makes the buckle 20 unsightly in appearance.

To couple the male and female members 21, 22 of the buckle 20 as shown in Figures 9 and 10, the resilient legs 24, 24 of the male member 21 are inserted into the socket portion 35 of the female member 22. In this instance, the inner guide surfaces 42a, 43a of the guide walls 42, 43 are brought into frictional engagement with the locking projections 30, whereupon the legs 24 are urged to flex resiliently toward each other. Further advancing of the legs 24 causes the locking projections 30 to move past the respective inner guide surfaces 42a, 43a, thus enabling the legs 24 to expand to their original position. In this position, the abutment surfaces 32 of the locking projections 30 are brought into engagement with the retaining surfaces 42b, 43b of the guide walls 42, 43, thereby locking the male and female members 21, 22 in coupled condition. The actuating lugs 49 are held in touch with the locking projections 30 so that they do not apply to the legs 24 forces tending to cause disengagement of the projections 30 and the guide walls 32, 33. When the surfaces 32, 42b, 43b abut together, they generate a pleasant sound of engagement, thus enabling a user to cease further advancing the legs 24 in the socket portion 35.

To disengage the male and female members 21, 22, the finger grips 48 are pressed by a user's fin-

gers to resiliently flex the arms 47 toward each other, whereupon the actuating lugs 49 urge the projections 30 toward each other against the resiliency of the legs 24. Further pressing on the finger grips 48 causes the abutment surfaces 32 to disengage from the retaining surfaces 42b, 43b, thus allowing the male member 21 to be detached from the female member 22. In this instance, the legs 24 are thrust out from the socket portion 35 by the resilient forces stored therein.

The buckle 20 thus constructed has many advantages: With the resilient arms 47 being disposed in the lateral grooves 45 defined between the top and bottom plates 40, 41, when the arms 47 are subjected to forces tending to flex the arms 47 in a direction perpendicular to the general plane of the socket portion 35, movement of the arms 47 in said direction is limited by the top and bottom plates 40, 41. Movement of the arms 47 away from one another in the general plane of the socket portion 35 is limited by the stop fingers 50 received in the apertures 51 in the bottom plate 41. Furthermore, movement of the arms 47 toward each other is also limited by the guide walls 42, 43 disposed inwardly of the arms 47.

Figure 11 shows a modified male member 52 which is substantially the same as the male member 21 shown in Figure 1 with the exception that a generally U-shaped reinforcing rib 53 is disposed between a pair of resilient legs 54, 54 of the male member 52 with a U-shaped slit 55 extending along the legs 54 and a connector frame 56 of the male member 52. The U-shaped reinforcing rib 53 is connected at its opposite ends with respective distal ends of the legs 54, 54. The reinforcing rib 53 has the same thickness as the legs 54. With the reinforcing rib 53 thus provided, the legs 54 have an increased degree of resiliency which is large enough to withstand forces tending to flex the legs 54 toward and away from each other. The male member 52 thus constructed is coupled with the female member 22 as shown in Figure 12.

Another modified male member 57 shown in Figure 13 is similar to the male member shown in Figure 11 but differs therefrom in that a generally U-shaped reinforcement rib 58 is integral with a connector frame 59 of the male member 57 so that a pair of slits 60 is defined respectively between the reinforcing rib 58 and one resilient leg 61 and between the reinforcing rib 58 and another resilient leg 62. The legs 61, 62 have a pair of guide fins 63, 63 respectively projecting from abutment surfaces 64, 64 of the legs 61 toward the connector frame 59, 62. The fins 63, 63 are guidedly receivable between opposed pairs of guide walls 65, 65 (only one pair being shown in Figure 14) of the socket portion 66 of a female member 67 when the male and female members 57, 67 are coupled together. Other structural details of the female member 67 are the same as the female member 22 shown in Figure 4 and description is not necessary.

Claims

1. A buckle (20) for fastening end portions (S1, S2) of an article, comprising: a male member (21) adapted to be connected to one (S1) of the end portions (S1, S2) and including a pair of resiliently flexible legs (24) having a pair of abutment surfaces (32); and a female member (22) adapted to be connected to the other end portion (S2) and including a socket portion (35) releasably couplable with said legs (24), said socket portion (35) including a pair of opposed plates (40, 41) and a pair of spaced guide walls (42, 43) extending from an inner surface of one of said plates (40, 41) toward the other plate so as to define therebetween a slot (44) for receiving therein said legs (24), said guide walls (42, 43) having a pair of retaining surfaces (42b, 43b) respectively engageable with said abutment surfaces (32) of said legs (24), said socket portion (35) further including a pair of cantilevered resilient arms (47) having at distal ends thereof a pair of actuating lugs (49) extending toward each other and engageable with said legs (24), characterized in that said socket portion (35) further includes a pair of lateral grooves (45) disposed on opposite sides of and outside said slot (44) and defined by and between said plates (40, 41) and said guide walls (42, 43), said actuating lugs (49) of said arms (47) being disposed respectively in said lateral grooves (45), and that one of said plates (41) has a pair of recessed portions (51) facing said lateral grooves (45), respectively, said arms (47) having a pair of stop fingers (50) respectively disposed on said actuating lugs (49) and projecting therefrom into said recessed portions (51) of said one plate (41).

2. A buckle according to claim 1, said male member (21) further including a first connector frame (23) adapted to be connected to the one end portion (S1) of the article, said legs (24) extending from said first connector frame (23) in a common direction, said abutment surfaces (32) facing toward said first connector frame (23), said female member (22) further including a second connector frame (34) adapted to be connected to the other end portion (S2) of the article, said plates (40, 41) extending from said second connector frame (34), said retaining surfaces (42b, 43b) facing toward said second connector frame (34).

3. A buckle according to claim 1 or 2, said socket portion (35) further including a pair of enlarged finger grips (48) respectively disposed on said distal ends of said arms (47) and projecting transversely outwardly from said lateral grooves (45).

4. A buckle according to claim 1, 2 or 3, said arms (47) being disposed in said lateral grooves (45) and having proximal ends joined with said plates (40, 41) at one end of the latter, said arms (47) extending along opposite longitudinal edges of each said plate (41, 42).

5. A buckle according to one of the claims 1 to 4, said socket portion (35) further including a central partition wall (46) disposed centrally in said slot (44) and spaced equidistantly from said



gers to resiliently flex the arms 47 toward each other, whereupon the actuating lugs 49 urge the projections 30 toward each other against the resiliency of the legs 24. Further pressing on the finger grips 48 causes the abutment surfaces 32 to disengage from the retaining surfaces 42b, 43b, thus allowing the male member 21 to be detached from the female member 22. In this instance, the legs 24 are thrust out from the socket portion 35 by the resilient forces stored therein.

The buckle 20 thus constructed has many advantages: With the resilient arms 47 being disposed in the lateral grooves 45 defined between the top and bottom plates 40, 41, when the arms 47 are subjected to forces tending to flex the arms 47 in a direction perpendicular to the general plane of the socket portion 35, movement of the arms 47 in said direction is limited by the top and bottom plates 40, 41. Movement of the arms 47 away from one another in the general plane of the socket portion 35 is limited by the stop fingers 50 received in the apertures 51 in the bottom plate 41. Furthermore, movement of the arms 47 toward each other is also limited by the guide walls 42, 43 disposed inwardly of the arms 47.

Figure 11 shows a modified male member 52 which is substantially the same as the male member 21 shown in Figure 1 with the exception that a generally U-shaped reinforcing rib 53 is disposed between a pair of resilient legs 54, 54 of the male member 52 with a U-shaped slit 55 extending along the legs 54 and a connector frame 56 of the male member 52. The U-shaped reinforcing rib 53 is connected at its opposite ends with respective distal ends of the legs 54, 54. The reinforcing rib 53 has the same thickness as the legs 54. With the reinforcing rib 53 thus provided, the legs 54 have an increased degree of resiliency which is large enough to withstand forces tending to flex the legs 54 toward and away from each other. The male member 52 thus constructed is coupled with the female member 22 as shown in Figure 12.

Another modified male member 57 shown in Figure 13 is similar to the male member shown in Figure 11 but differs therefrom in that a generally U-shaped reinforcement rib 58 is integral with a connector frame 59 of the male member 57 so that a pair of slits 60 is defined respectively between the reinforcing rib 58 and one resilient leg 61 and between the reinforcing rib 58 and another resilient leg 62. The legs 61, 62 have a pair of guide fins 63, 63 respectively projecting from abutment surfaces 64, 64 of the legs 61 toward the connector frame 59, 62. The fins 63, 63 are guidedly receivable between opposed pairs of guide walls 65, 65 (only one pair being shown in Figure 14) of the socket portion 66 of a female member 67 when the male and female members 57, 67 are coupled together. Other structural details of the female member 67 are the same as the female member 22 shown in Figure 4 and description is not necessary.

Claims

1. A buckle (20) for fastening end portions (S1, S2) of an article, comprising: a male member (21) adapted to be connected to one (S1) of the end portions (S1, S2) and including a pair of resiliently flexible legs (24) having a pair of abutment surfaces (32); and a female member (22) adapted to be connected to the other end portion (S2) and including a socket portion (35) releasably couplable with said legs (24), said socket portion (35) including a pair of opposed plates (40, 41) and a pair of spaced guide walls (42, 43) extending from an inner surface of one of said plates (40, 41) toward the other plate so as to define therebetween a slot (44) for receiving therein said legs (24), said guide walls (42, 43) having a pair of retaining surfaces (42b, 43b) respectively engageable with said abutment surfaces (32) of said legs (24), said socket portion (35) further including a pair of cantilevered resilient arms (47) having at distal ends thereof a pair of actuating lugs (49) extending toward each other and engageable with said legs (24), characterized in that said socket portion (35) further includes a pair of lateral grooves (45) disposed on opposite sides of and outside said slot (44) and defined by and between said plates (40, 41) and said guide walls (42, 43), said actuating lugs (49) of said arms (47) being disposed respectively in said lateral grooves (45), and that one of said plates (41) has a pair of recessed portions (51) facing said lateral grooves (45), respectively, said arms (47) having a pair of stop fingers (50) respectively disposed on said actuating lugs (49) and projecting therefrom into said recessed portions (51) of said one plate (41).

2. A buckle according to claim 1, said male member (21) further including a first connector frame (23) adapted to be connected to the one end portion (S1) of the article, said legs (24) extending from said first connector frame (23) in a common direction, said abutment surfaces (32) facing toward said first connector frame (23), said female member (22) further including a second connector frame (34) adapted to be connected to the other end portion (S2) of the article, said plates (40, 41) extending from said second connector frame (34), said retaining surfaces (42b, 43b) facing toward said second connector frame (34).

3. A buckle according to claim 1 or 2, said socket portion (35) further including a pair of enlarged finger grips (48) respectively disposed on said distal ends of said arms (47) and projecting transversely outwardly from said lateral grooves (45).

4. A buckle according to claim 1, 2 or 3, said arms (47) being disposed in said lateral grooves (45) and having proximal ends joined with said plates (40, 41) at one end of the latter, said arms (47) extending along opposite longitudinal edges of each said plate (41, 42).

5. A buckle according to one of the claims 1 to 4, said socket portion (35) further including a central partition wall (46) disposed centrally in said slot (44) and spaced equidistantly from said



guide walls (42, 43) to separate said slot (44) into two slot portions (44a, 44b) for receiving therein said legs (24), respectively.

6. A buckle according to one of the claims 1 to 5, said legs (61) including a pair of guide fins (65) projecting respectively from said abutment surfaces (32) toward proximal ends thereof, said socket portion (66) including a further pair of guide walls (65) disposed on the other plate (40) in confronting relation to the first-mentioned guide walls (42, 43) said guide fins (65) being guidedly receivable between said first-mentioned guide walls (42, 43) and the last-mentioned guide walls (65).

7. A buckle according to one of the claims 1 to 6, said recessed portions (51) of said one plate (41) comprising apertures communicating with said lateral grooves (45), respectively.

8. A buckle according to one of the claims 1 to 7, said male member (52; 57) further including a generally U-shaped reinforcing rib (53; 58) disposed between and extending along said legs (54; 61, 62) with a pair of slits (55; 60) defined therebetween, said U-shaped reinforcing rib having opposite ends connected to the distal ends of said legs (54; 61, 62).

9. A buckle according to claim 8, said male member (52) further including a connector frame (56) adapted to be connected to the one end portion of the article, said legs (54) extending from said connector frame (56) in a common direction, said U-shaped reinforcing rib being spaced from said first connector frame (56), said slits being contiguous to one another into a U-shape (55).

10. A buckle according to claim 8, said male member (57) further including a connector frame (59) adapted to be connected to the one end portion of the article, said legs (61, 62) extending from said connector frame (59) in a common direction, said U-shaped reinforcing rib (58) being joined with said first connector frame (59).

11. A buckle according to claim 8, said reinforcing rib (53; 58) having the same thickness as the legs (54; 61, 62).

Patentansprüche

1. Schnalle zum Befestigen von Endbereichen (S1, S2) eines Gegenstandes, umfassend: ein männliches Teil (21), das mit einem (S1) der Endbereiche (S1, S2) verbindbar ist und zwei elastisch verformbare Schenkel (24) aufweist, die zwei Anschlagflächen (32) haben; und ein weibliches Teil (22), das mit dem anderen Endbereich (S2) verbindbar ist und einen Buchsenbereich (35) aufweist, der mit den Schenkeln (24) lösbar kuppelbar ist, wobei der Buchsenbereich (35) zwei einander gegenüberliegende Platten (40, 41) und zwei beabstandete Führungswände (42, 43) aufweist, die sich von einer Innenfläche der einen dieser Seitenplatten (40, 41) zu der anderen Platte hin erstrecken, um dazwischen einen Schlitz (44) zur Aufnahme der Schenkel (24) zu begrenzen, wobei die Führungswände (42, 43) zwei Sperrflächen (42b, 43b) haben, die mit den Anschlagflächen (32) der Schenkel (24) in Ein-

griff bringbar sind, wobei der Buchsenbereich (35) ferner zwei freitragende elastische Arme (47) aufweist, an deren abliegenden Enden zwei Betätigungsvorsprünge (49) angeordnet sind, die sich zueinander hin erstrecken und die mit den Schenkeln (24) in Eingriff bringbar sind, dadurch gekennzeichnet, dass der Buchsenbereich (35) ferner zwei seitliche Nuten (45) aufweist, die auf gegenüberliegenden Seiten und ausserhalb des Schlitzes (44) angeordnet und von und zwischen den Platten (40, 41) und den Führungswänden (42, 43) begrenzt sind, wobei die Betätigungsvorsprünge (49) der Arme (47) in den seitlichen Nuten (45) angeordnet sind, und dass eine der Platten (41) zwei den seitlichen Nuten (45) zugekehrte ausgesparte Bereiche (51) hat, wobei die Arme (47) zwei Anschlagfinger (50) haben, die auf den Betätigungsvorsprüngen (49) angeordnet sind und von diesen in die ausgesparten Bereiche (51) der einen Platte (41) hineinragen.

2. Schnalle nach Anspruch 1, wobei das männliche Teil (21) ferner einen ersten Verbindungsrahmen (23) aufweist, der mit dem einen Endbereich (S1) des Gegenstandes verbindbar ist, wobei sich die Schenkel (24) von dem ersten Verbindungsrahmen (23) in einer ersten Richtung erstrecken, wobei die Anschlagflächen (32) dem ersten Verbindungsrahmen (23) zugekehrt sind, wobei das weibliche Teil (22) ferner einen zweiten Verbindungsrahmen (34) aufweist, der mit dem anderen Endbereich (S2) des Gegenstandes verbindbar ist, wobei sich die Platten (40, 41) von dem zweiten Verbindungsrahmen (34) erstrecken, wobei die Sperrflächen (42b, 43b) dem zweiten Verbindungsrahmen (34) zugekehrt sind.

3. Schnalle nach Anspruch 1 oder 2, wobei der Buchsenbereich (35) ferner zwei vergrösserte Griffstücke (48) aufweist, die an den abliegenden Enden der Arme (47) angeordnet sind und von den seitlichen Nuten (45) quer nach aussen vorspringen.

4. Schnalle nach Anspruch 1, 2 oder 3, wobei die Arme (47) in den seitlichen Nuten (45) angeordnet und mit ihren anliegenden Enden mit einem Ende der Platten (40, 41) verbunden sind, wobei sich die Arme (47) entlang gegenüberliegender Längskanten jeder Platte (40, 41) erstrecken.

5. Schnalle nach einem der Ansprüche 1 bis 4, wobei der Buchsenbereich (35) ferner eine mittlere Trennwand (46) aufweist, die in der Mitte des Schlitzes (44) angeordnet ist und von den beiden Führungswänden (42, 43) den gleichen Abstand aufweist, um den Schlitz (44) in zwei Schlitzbereiche (44a, 44b) zur Aufnahme der Schenkel (24) zu unterteilen.

6. Schnalle nach einem der Ansprüche 1 bis 5, wobei die Schenkel (61) zwei Führungsflossen (63) aufweisen, die von den Anschlagflächen (32) gegen deren anliegende Enden vorspringen, wobei der Buchsenbereich (66) zwei weitere Führungswände (65) aufweist, die auf der anderen Platte (44) in gegenüberliegender Beziehung zwischen den erstgenannten Führungswänden (42, 43) angeordnet sind, wobei die Führungs-



flossen (63) zwischen den erstgenannten Führungswänden (42, 43) und den letztgenannten Führungswänden (65) geführt aufnehmbar sind.

7. Schnalle nach einem der Ansprüche 1 bis 6, wobei die ausgesparten Bereiche (51) der einen Platte (41) Öffnungen umfassen, die mit den seitlichen Nuten (45) in Verbindung stehen.

8. Schnalle nach einem der Ansprüche 1 bis 7, wobei das männliche Teil (52; 57) ferner eine im allgemeinen U-förmige Verstärkungsrippe (53; 58) aufweist, die zwischen und entlang den Schenkeln (54; 61; 62) angeordnet ist, wobei zwei Schlitz (55; 60) dazwischen begrenzt sind, wobei diese U-förmige Verstärkungsrippe gegenüberliegende Enden hat, die mit den abliegenden Enden der Schenkel (54; 61; 62) verbunden sind.

9. Schnalle nach Anspruch 8, wobei das männliche Teil (52) ferner einen mit dem einen Endbereich des Gegenstandes verbindbaren Verbindungsrahmen (56) aufweist, wobei sich die Schenkel (54) von dem Verbindungsrahmen (56) in einer gemeinsamen Richtung erstrecken, wobei die U-förmige Verstärkungsrippe von dem ersten Verbindungsrahmen (56) im Abstand angeordnet ist, wobei die Schlitz zu einer U-Form (55) ineinander übergehen.

10. Schnalle nach Anspruch 8, wobei das männliche Teil (57) ferner einen Verbindungsrahmen (59) aufweist, der mit dem anderen Endbereich des Gegenstandes verbindbar ist, wobei sich die Schenkel (61, 62) von dem Verbindungsrahmen (59) in einer gemeinsamen Richtung erstrecken, wobei die U-förmige Verstärkungsrippe (58) mit dem ersten Verbindungsrahmen (59) verbunden ist.

11. Schnalle nach Anspruch 8, wobei die Verstärkungsrippe (53, 58) die gleiche Dicke hat wie die Schenkel (54; 61; 62).

Revendications

1. Boucle (20) pour attacher les parties extrêmes (S1, S2) d'un article, comprenant: une pièce mâle (21) conçue pour être reliée à une première extrémité (S1) des parties extrêmes (S1, S2) et comportant deux branches élastiquement souples (24) ayant deux surfaces de butée (32); et une pièce femelle (22) conçue pour être reliée à l'autre partie extrême (S2) et comportant une partie creuse (35) accouplable de manière séparable avec lesdites branches (24), ladite partie creuse (35) comprenant deux plaques opposées (40, 41) et deux parois de guidage espacées (42, 43) s'étendant depuis une surface interne d'une desdites plaques (40, 41) vers l'autre plaque de façon à définir entre celles-ci une fente (44) servant à loger dans celle-ci lesdites branches (24), lesdites parois de guidage (42, 43) ayant deux surfaces de retenue (42b, 43b) amenables respectivement au contact desdites surfaces de butée (32) desdites branches (24), ladite partie creuse (35) comportant en outre deux bras élastiques (47) en porte-à-faux ayant à leurs extrémités distales deux pattes d'actionnement (49) s'étendant l'une vers l'autre et amenables au contact desdites branches (24), caractérisée en ce que ladite partie creuse

(35) comporte en outre deux gorges latérales (45) disposées de part et d'autre et à l'extérieur de ladite fente (44) et définies par et entre lesdites plaques (40, 41) et lesdites parois de guidage (42, 43), lesdites pattes d'actionnement (49) desdits bras (47) étant respectivement disposées dans lesdites gorges latérales (45), et en ce qu'une desdites plaques (41) a deux parties évidées (51), faisant respectivement face auxdites gorges latérales (45), lesdits bras (47) ayant respectivement deux doigts d'arrêt (50) disposés sur lesdites pattes d'actionnement (49) et dépassant depuis celles-ci jusque dans lesdites parties évidées (51) de ladite première plaque (41).

2. Boucle selon la revendication 1, ladite pièce mâle (21) comportant en outre un premier bâti de raccordement (23) conçu pour être relié à la première partie extrême (S1) de l'article, lesdites branches (24) s'étendant depuis ledit premier bâti de raccordement (23) dans une direction commune, lesdites surfaces de butée (32) étant orientées vers ledit premier bâti de raccordement (23), ladite pièce femelle (22) comportant en outre un second bâti de raccordement (34) conçu pour être relié à l'autre partie extrême (S2) de l'article, lesdites plaques (40, 41) s'étendant depuis ledit second bâti de raccordement (34), lesdites surfaces de retenue (42b, 43b) étant orientées vers ledit second bâti de raccordement (34).

3. Boucle selon la revendication 1 ou 2, ladite partie creuse (35) comportant en outre deux moyens de préhension (48) agrandis pour les doigts de la main, respectivement disposés auxdites extrémités distales desdits bras (47) et dépassant transversalement vers l'extérieur depuis lesdites gorges latérales (45).

4. Boucle selon la revendication 1, 2 ou 3, lesdits bras (47) étant disposés dans lesdites gorges latérales (45) et ayant des extrémités proximales réunies avec lesdites plaques (40, 41) à une extrémité de ces dernières, lesdits bras (47) s'étendant le long de bords longitudinaux opposés de chacune desdites plaques (41, 42).

5. Boucle selon l'une quelconque des revendications 1 à 4, ladite partie creuse (35) comportant en outre une cloison centrale (46) disposée au centre de ladite fente (44) et à équidistance desdites parois de guidage (42, 43) pour séparer ladite fente (44) en deux parties (44a, 44b) de fente pour y recevoir respectivement lesdites branches (24).

6. Boucle selon l'une quelconque des revendications 1 à 5, lesdites branches (61) comportant deux ailettes de guidage (63) dépassant respectivement desdites surfaces de butée (32) vers les extrémités proximales de celles-ci, ladite partie creuse (66) comportant deux autres parois de guidage (65) disposées sur l'autre plaque (40), en regard des premières parois de guidage précitées (42, 43), lesdites ailettes de guidage (63) étant logeables par guidage entre lesdites premières parois de guidage précitées (42, 43) et les dernières parois de guidage citées (65).

7. Boucle selon l'une quelconque des revendications 1 à 6, lesdites parties évidées (51) de la-



dite plaque (41) comportant des ouvertures communiquant respectivement avec lesdites gorges latérales (45).

8. Boucle selon l'une quelconque des revendications 1 à 7, ladite pièce mâle (52; 57) comportant en outre une nervure de renfort (53; 58) globalement en forme de U disposée entre lesdites branches (54; 61, 62) et s'étendant le long de ces dernières, deux fentes (55; 60) étant définies entre celles-ci, les extrémités opposées de ladite nervure de renfort en forme de U étant reliées aux extrémités distales desdites branches (54; 61, 62).

9. Boucle selon la revendication 8, ladite pièce mâle (52) comportant en outre un bâti de raccordement (56) conçu pour être relié à la première partie extrême de l'article, lesdites branches (54) s'étendant dans une direction commune depuis

ledit bâti de raccordement (56), ladite nervure de renfort en forme de U étant espacée dudit premier bâti de raccordement (56), lesdites fentes étant contiguës les unes aux autres pour prendre la forme d'un U (55).

10. Boucle selon la revendication 8, ladite pièce mâle (57) comportant en outre un bâti de raccordement (59) conçu pour être relié à la première partie extrême de l'article, lesdites branches (61, 62) s'étendant dans une direction commune depuis ledit bâti de raccordement (59), ladite nervure de renfort (58) en forme de U étant réunie avec ledit premier bâti de raccordement (59).

11. Boucle selon la revendication 8, ladite nervure de renfort (53; 58) ayant la même épaisseur que les branches (54; 61, 62).