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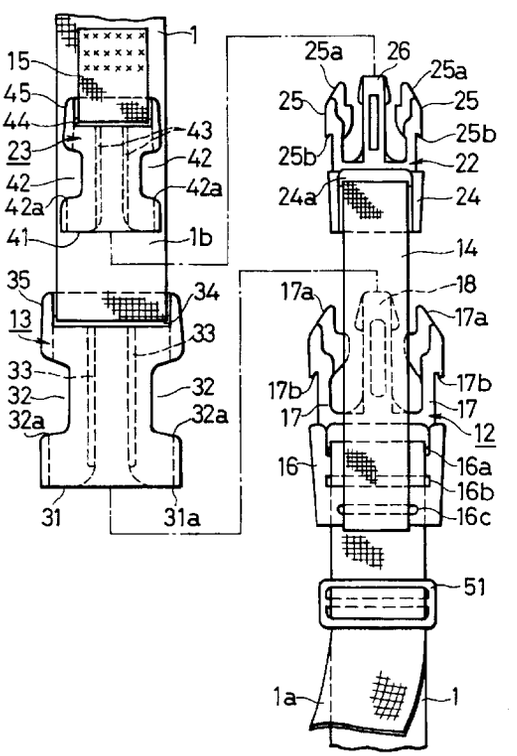
(54) Belt connector

(57) A belt connector includes a buckle (11) having a male member (12) for fastening to a first end (1a) of a belt (1) and a female member (13) for fastening to a second end (1b) of the belt (1) and enabling the first and second ends (1a, 1b) of the belt (1) to be releasably connected by engagement of the male member (12) and the female member (13). The belt connector is characterized by a first auxiliary belt (14) fastened at a first end thereof to the first end (1a) of the belt (1) to overlie the buckle (11) when the buckle (11) is engaged, and a releasable security clasp (21) fastened between a second end of the first auxiliary belt (14) and the second end (1b) of the belt (1).

FIG. 1



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Description

This invention relates to a belt connector used mainly as part of a baby holder for carrying a baby in front of the user, more particularly to a belt connector wherein a male member and a female member of a buckle are attached to the opposite ends of a belt passed over a shoulder or around the neck or waist of the user for enabling one end of the belt to be releasably connected with the other by engaging the male and female members.

Figure 5 is a perspective view showing a baby holder in use. The baby holder comprises a belt 1 passed over a shoulder of the user, a belt connector 2 connecting the opposite ends of the belt 1, a seat 3 and a shoulder pad 4 provided on the belt 1, and a back support 5 provided a little above the seat 3 in the manner of a tie.

For comfortable seating of the baby, the seat 3 provided on the belt 1 is preferably made wider than the belt 1. The seat 3 is constituted as a bag closed by a fastener 6 and can also be used as a waist bag. The bag is constituted to have a broad upper surface and the ends of the belt 1 are attached thereto, by sewing for example. If the ends of the belt 1 are sewn to the bag, it is preferable to make the belt wide at the portions sewn to the bag and to sew these portions to opposite edge portions of the bag. The seating surface of the bag can be made more comfortable by padding it with a cushioning material. In this case, the fastness of the attachment between the belt 1 and the bag can be increased by sewing the belt 1 to the interior of the bag, namely at portions inward of the seating surface.

The belt 1 is formed into a closed loop by connecting its opposite ends 1a, 1b through the belt connector 2. The connector 2 comprises two connectable/disconnectable buckle members, namely a male member and a female member. A cover or sheet protector is provided over the connector 2 for preventing the buckle from being unintentionally released.

However, the provision of such a protector does not completely eliminate the possibility of accidental buckle release. Since recent buckles have plastic male and female members designed to be released by a one-touch operation, there is a risk of buckle release owing to breakage or fatigue of the engaging portions. When such an unexpected buckle release occurs, the baby is likely to fall and be injured.

This invention was accomplished in light of the foregoing circumstances and aims at providing a belt connector capable of maintaining the connection even if an engaging portion should release contrary to the intention of the user.

For achieving this object, the invention provides a belt connector comprising

a buckle having a male member for fastening to a first end of a belt and a female member for fastening to a second end of the belt,

a first auxiliary belt having a first end fastened to the first end of said belt and overlying the buckle when the buckle is engaged, and

a releasable security clasp having one end fastened to a second end of the first auxiliary belt and another end fastened to the second end of said belt.

The security clasp can be a buckle member having engageable male and female members. The member of the buckle fastened to the first end of the belt is preferably provided with belt length adjustment means and with a slot for fastening the first auxiliary belt so that the first auxiliary belt can be fastened to the one end of the belt through the member of the buckle by attachment at the slot.

Since the belt connector connects a belt into a closed loop by the engagement of the male and female members of the buckle and also by the engagement of the security clasp, even if the buckle, for instance, should release, the closed loop can still be maintained by the security clasp fastened to the auxiliary belt, which remains engaged. When the belt connector is applied to the belt of a baby holder, therefore, falling of the baby can be reliably prevented.

When the belt connector according to the invention is applied to the belt of a baby holder, the provision of the belt length adjustment means on the buckle male or female member fastened to one end of the belt, the effective length of the belt can be adjusted to the body of the user and so as to position the seat at the level that is least tiring. Since one end of the first auxiliary belt is fastened to the slot in the male or female member of the buckle, moreover, the security clasp or the male and female members constituting the security clasp can be engaged while the length of the first auxiliary belt is maintained the same even after the effective length of the belt has been adjusted.

The above and other objects and features of the present invention will become apparent from the following description made with reference to the drawings.

Figure 1 is a plan view of the belt connector according to the invention showing its buckle and its security clasp in the released state.

Figure 2 is a side view, partially in section, showing the engaged state of the buckle and the security clasp of Figure 1.

Figure 3 is a perspective view showing the engaged state of another embodiment of the buckle usable in the belt connector according to the invention.

Figure 4 is a perspective view showing the buckle of Figure 3 in the released state.

Figure 5 is a perspective view showing the belt connector applied to a baby holder.

Figure 1 is a plan view of a belt connector 2 which is a first embodiment of the invention showing its buckle 11 and its security clasp 21 in the released state and Figure 2 is a side view, partially in section, showing the engaged state of the buckle 11 and the security clasp

21. Similarly to in the conventional example shown in Figure 5, a male member 12 of the buckle 11 is fastened to one end la of the belt 1 and a female member 13 of the buckle 11 is attached to the other end 1b of the belt 1. The male member 12 has a base 16, a pair of flexible arms 17, 17 projecting from the base 16 at its opposite sides, and a guide arm 18 projecting from the base 16 between the flexible arms 17, 17. The tip of each flexible arm 17 is formed with a sloped portion 17a which narrows the flexible arm 17 inward toward its distal end and, at an outer portion midway of its length, with a catch 17b. The tip of the guide arm 18 has a generally sagittal shape. The base 16 of the male member 12 is formed with lateral slots 16a, 16b for attachment of the one end la of the belt 1 in a manner enabling adjustment of the effective length of the belt 1 and, outward of the slots 16a, 16b (on the side opposite from the flexible arms 17, 17 etc.), with a belt fastening slot 16c for a first auxiliary belt 14.

As shown in Figure 2, the male member 12 can be fastened to the one end la of the belt 1 by passing the tip of the belt 1 through the slot 16a from the rear to the front and then turning it back and passing it through the slot 16b from the front to the rear. When the male member 12 is fastened to the belt in this manner, the point at which the belt 1 turns back is the fastening point of the male member 12. Since the position of the fastening point can be moved by sliding the portion of the belt 1 passing through the slots 16a, 16b, the effective length of the belt 1 can be varied as desired. The one end la of the belt 1 is fixed to the belt 1 by a retaining buckle 51.

The first auxiliary belt 14 is fastened to the male member 12 by passing one end (the proximal end) of the first auxiliary belt 14 from the front of the base 16 to the rear thereof by wrapping it around the proximal end of the base 16 (the lower end in Figure 1), passing it through the belt fastening slot 16c from the rear to the front and sewing it to the rear of the first auxiliary belt 14 at the portion thereof overlying the male member 12. The fastening of the belt to itself can also be done with rivets or other fastening means rather than by sewing.

A male member 22 of the security clasp 21 is fastened to the distal end of the first auxiliary belt 14. The male member 22 is configured similarly to the male member 12. It has a base 24, a pair of flexible arms 25, 25 projecting from the base 24 at its opposite sides, and a guide arm 26 projecting from the base 24 between the flexible arms 25, 25. The tip of each flexible arm 25 is formed with a sloped portion 25a which narrows the flexible arm 25 inward toward its distal end and, at an outer portion midway of its length, with a catch 25b. The tip of the guide arm 26 has a generally sagittal shape. The base 24 of the male member 22 is formed with a lateral slot 24a for attachment of the distal end portion of the first auxiliary belt 14. The end portion of the first auxiliary belt 14 can be fastened to the male member 22 by passing it through the slot 24a from the front to the rear, turning it back, and sewing the turned back portion to the rear of the first auxiliary belt 14.

The female member 13 is a flattened cylinder having an opening 31 at its forward end for insertion of the flexible arms 17, 17 and the guide arm 18 of the male member 12. It is cut away at the opposite sides to form slots 32, 32, formed internally with guide walls 33, 33, and formed at its rearward end portion (top portion in Figure 1) with a slot 34 for attachment of the belt 1. The so-constituted female member 13 can be fastened to the other end 1b of the belt 1 (opposite end from the male member 12) by, as shown in Figure 2, passing the other end 1b through the slot 34 from the front to the rear, turning it back to wrap around the rear end of the base 35, and sewing it to the back of the belt 1. The point at which the belt 1 turns back is the fastening point of the female member 13. The female member 13 does not require belt length adjustment means since the male member 12 has belt adjustment capability, but it can be provided with such means if desired.

The proximal end of a second auxiliary belt 15 is sewn to the front of the belt 1 at an appropriate distance from the fastening point of the female member 13 thereon, so as to extend toward the female member 13. A female member 23 of the security clasp 21 is fastened to the distal end of the second auxiliary belt 15. The proximal end of the second auxiliary belt 15 is preferably sewn to the belt 1 far enough back to ensure that the female member 23 attached to the distal end of the second auxiliary belt 15 does not overlap the female member 13.

The female member 23 is configured similarly to the female member 13. It is a flattened cylinder having an opening 41 at its forward end for insertion of the flexible arms 25, 25 and the guide arm 26 of the male member 22. It is cut away at the opposite sides to form slots 42, 42, formed internally with guide walls 43, 43, and formed at its rearward end portion (top portion in Figure 1) with a slot 44 for attachment of the second auxiliary belt 15. The so-constituted female member 23 can be fastened to the second auxiliary belt 15 by passing the distal end of the second auxiliary belt 15 through the slot 44 from the front to the rear, turning it back to wrap around the rear end of the base 45, and sewing it to the back of the auxiliary belt 15.

In order to form the belt 1 into a closed loop using the belt connector 2 constituted with the buckle 11 and the security clasp 21 in the foregoing manner, the flexible arms 17, 17 of the male member 12 are first inserted into the opening 31 of the female member 13. This causes the sloped portions 17a, 17a of the flexible arms 17, 17 to contact with side wall end portions 31a, 31a of the female member 13. With further insertion, the flexible arms 17, 17 advance while flexing inward and the guide arm 18 enters the space between the guide walls 33, 33, which guide the direction of advance. When the penetration has proceeded sufficiently, namely to the point that the catches 17b, 17b of the flexible arms 17, 17 have passed by forward edges 32a, 32a of the slots 32,

32 of the female member 13, the flexible arms 17, 17 spring outward to bring the catches 17b, 17b into engagement with the forward edges 32a, 32a. Since the force of the engagement between the catches 17b, 17b and the forward edges 32a, 32a of the slots 32, 32 of the female member 13 prevents extraction of the male member 12, the male member 12 and the female member 13 are maintained in engagement. The belt 1 is therefore formed into a closed loop by the engagement between the male member 12 and the female member 13 at its opposite ends.

Next, the flexible arms 25, 25 of the male member 22 are inserted into the female member 23 through the opening 41, thereby joining the male member 22 and the female member 23 and connecting the first auxiliary belt 14 and the second auxiliary belt 15.

When the belt connector 2 is applied to the belt of a baby holder and the buckle 11 and the security clasp 21 are both connected to form the belt 1 into a closed loop, the user can wear the belt 1 in the manner of a sling, with the pad 4 resting on the shoulder, as shown in Figure 5. The user can then adjust the effective length of the belt 1 to position the seat 3 just above and forward of one hip. Since one end of the first auxiliary belt 14 is fastened to the male member 12, the adjustment of the effective length of the belt 1 does not affect the positional relationship of the male members 12 and 22 or the female members 13 and 23. As a result, the adjustment neither prevents engagement between the male member 22 and the female member 23 nor necessitates other troublesome operations such as adjustment of the lengths of the auxiliary belts 14 and 15.

As shown in Figure 5, the child (baby) is carried seated on the seat 3 facing the user with its legs straddling the user's waist. The back support 5 is adjusted to support the child's lower back. When the baby is carried using the baby holder in this manner, most of the child's weight is borne by the user's shoulder. The burden on the user is therefore much lighter than in the case of carrying the child in the arms only. In addition, one of the user's arms is freed and can be used for carrying a bag or the like.

When a child is carried in this manner, the child's weight produces tension in the belt 1 which acts in the direction of separating the buckle 11 and security clasp 21. The buckle 11 and the security clasp 21 are prevented from separating, however, by the engagement between the catches 17b, 17b of the male member 12 and the forward edges 32a, 32a of the female member 13 and the engagement between the catches 25b, 25b of the male member 22 and the forward edges 42a, 42a of the female member 23.

Even if the engagement between the male member 12 and the female member 13 of the buckle 11 should release owing to breakage of one or both of the flexible arms 17, 17, the engaged state of the security clasp 21 will be maintained to keep the belt 1 in its looped condition and protect the child from injury by falling or the like. On the other hand, if the security clasp 21 should break, the continuing engagement of the buckle 11 will keep the child from falling. Thus, if one or the other of the buckle 11 and the security clasp 21 should separate, the other will remain connected and keep the child safe from falling. If the engagement of the buckle 11 should release, the male member 12 will flip over and the belt end 1a will be subject to a strong force tending to separate it from the male member 12. Since the end 1a is fixed to the belt 1 by the retaining buckle 51, however, this danger does not arise. The means for fixing the belt end 1a to the belt 1 is not limited to the retaining buckle 51 and can instead be any of other variously configured fasteners.

To facilitate the engagement of the female member 23 and the male member 22 of the security clasp 21 after the buckle 11 has been engaged, the lengths of the first and second auxiliary belts 14 and 15 are preferably made slightly longer than the minimum required. Giving them a little extra length not only makes the security clasp 21 easy to connect and disconnect but also reduces the tension in the auxiliary belts 14 and 15 by causing most of the child's weight to be borne by the thick belt 1. Since this has the effect of reducing the fatigue of the auxiliary belts 14 and 15, particularly at their sewn portions, it enhances the safety of the belt connector by ensuring that the auxiliary belts 14, 15 connected by the security clasp 21 will be in optimum condition for reliably supporting the child should something go wrong with the buckle 11.

When the child is to be taken out of the baby holder, its weight is first transferred to another surface. The user then presses inward with the fingers on the portions of the flexible arms 25, 25 located in the slots 42, 42 of the female member 23 so as to release the catches 25b, 25b from the forward edges 42a, 42a of the slots 42, 42. The male member 22 can then be easily pulled out of the female member 23 to release the security clasp 21.

The buckle 11 can then be easily released by a similar operation.

In the embodiment described in the foregoing, the male member 12 of the buckle 11 is fastened to the one end 1a of the belt 1, the male member 22 of the security clasp 21 is fastened to the male member 12 by a first auxiliary belt 14, the female member 13 of the buckle 11 is fastened to the other end 1b of the belt 1, and the female member 23 of the security clasp 21 is fastened to the other end of the belt 1 by the second auxiliary belt 15. Instead, however, it is possible to fasten the female member 23 to the male member 12 by the first auxiliary belt 14 and to fasten the male member 22 to the other belt end 1b by the second auxiliary belt 15. It is also possible to fasten the male member 12 having the slots 16a, 16b constituting the belt length adjustment means and the belt fastening slot 16c for the first auxiliary belt to the one belt end 1a, fasten the first auxiliary belt 14 to the male member 12 and fasten the female member 23 or the male member 22 to the end of the first auxiliary

belt 14.

As shown in Figures 3 and 4, for example, the male and female members of one or both of the buckle 11 and the security clasp 21 can be constituted by integrally forming one half of the male member 12 and the other half of the female member 23 side by side on a first common base 61 and integrally forming one half of the female member 13 and the other half of the male member 22 side by side on a second common base 62. With the buckle member of this configuration, the first common base 61 is held in one hand and the second common base 62 in the other, whereafter the one half of the male member 12 is inserted into the one half of the female member 13 and the other half of the male member 22 is inserted to the other half of the female member 23. As a result, the catches 17b, 25b engage with the forward edges 32a, 42a. The configuration thus enables simple connection of the buckle 11 and the security clasp 21.

While in the embodiment of the invention described in the foregoing the security clasp 21 is described as being a buckle comprising the male member 22 and female member 23, the security clasp 21 does not have to be a buckle but can instead be any of various types of connecting means such as a tear-drop fastener, hook fastener, or a D-shaped or polygonal ring fastener or the like.

As explained in the foregoing, the belt connector according to the present invention connects a belt into a closed loop by connecting the opposite ends of the belt through the engagement of a buckle and a security clasp. Thus, if one of the buckle and the security clasp should accidentally disengage, the other will remain engaged to maintain the belt in a closed loop. When the belt connector is used to connect the ends of a belt of a baby holder, therefore, the baby is reliably prevented from falling even if one of the buckle members should be released by mistake or should disengage due to breakage. Owing to this feature, the user can employ the baby holder without anxiety.

Since the belt connector according to the invention is provided with a belt length adjustment means on the buckle to which the proximal end of the first auxiliary belt is fastened, the effective length of the belt can be adjusted as desired by use of this belt length adjustment means. The effective length of the belt can therefore be adjusted according to the height and girth of the user, and so as to position the seat at the level that is least tiring. Since one end of the first auxiliary belt is fastened to a member of the buckle, moreover, this adjustment of the effective belt length does not change the positional relationship of the two male members or that of the two female members. As a result, the adjustment neither prevents engagement of the security clasp nor necessitates other troublesome operations such as adjustment of the lengths of the auxiliary belts.

Claims

1. A belt connector comprising a buckle (11) having a male member (12) for fastening to a first end (1a) of a belt (1) and a female member (13) for fastening to a second end (1b) of the belt and enabling the first and second ends (1a, 1b) of the belt to be releasably connected by engagement of the male member and the female member, characterized in that

   a first auxiliary belt (14) is fastened at a first end thereof to the first end (1a) of said belt to overlie the buckle (11) when the buckle is engaged, and a releasable security clasp (21) is fastened between a second end of the first auxiliary belt and the second end (1b) of said belt.

2. A belt connector according to claim 1, characterized in that the security clasp (21) is a buckle member having engageable male and female members (22, 23).

3. A belt connector according to claim 1, characterized in that the male member (12) of the buckle (11) for fastening to the first end (1a) of the belt is provided with belt length adjustment means (16a, 16b).

4. A belt connector according to claim 1, characterized in that the male member (12) of the buckle (11) for fastening to the first end (1a) of the belt is provided with a slot (16c) for fastening the first end of the first auxiliary belt (14).

5. A belt connector according to claim 1, characterized in that the second end (1b) of said belt (1) and the security clasp (21) are connected by a second auxiliary belt (15).

6. A belt connector according to claim 1, characterized in that the first end (la) of said belt fastened to the male member (12) of the buckle (11) is fastened to said belt by a retaining buckle (51).

FIG. 1

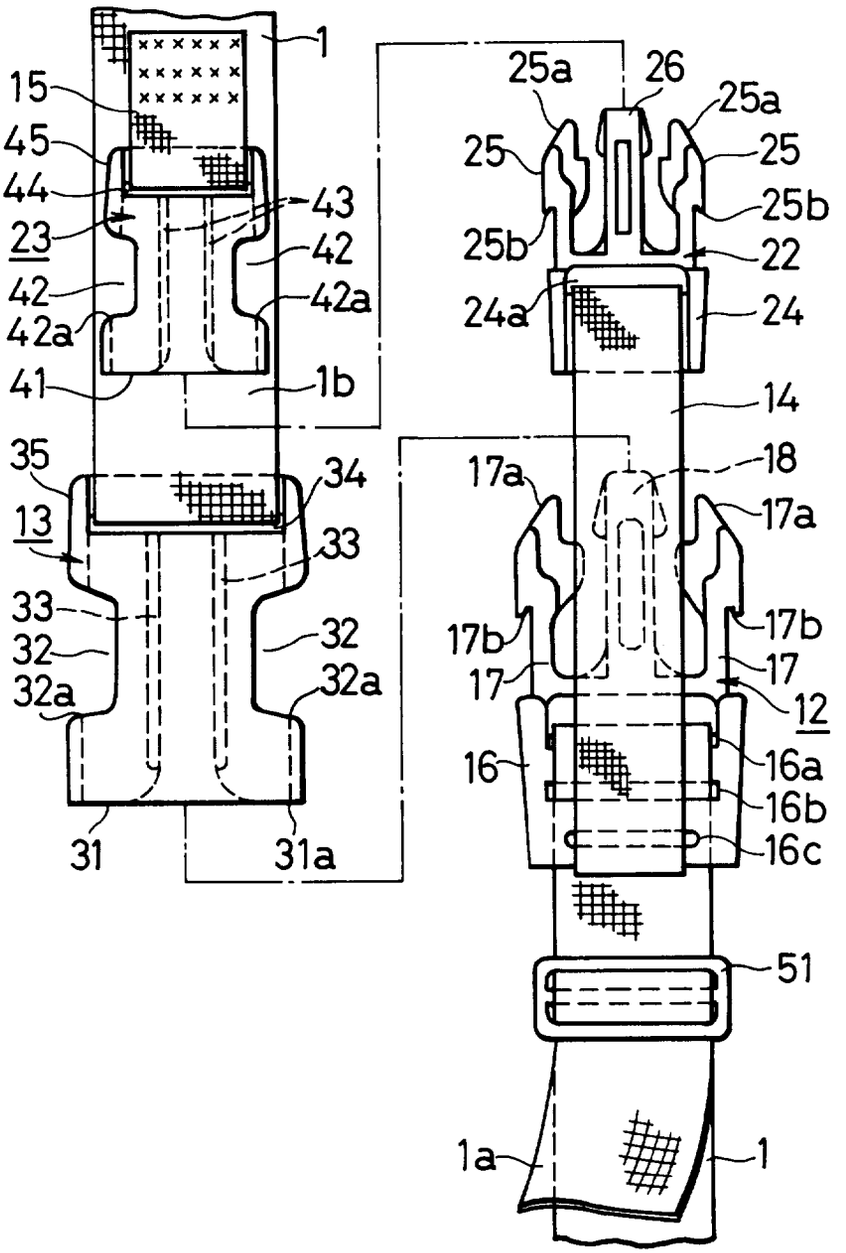
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FIG. 2

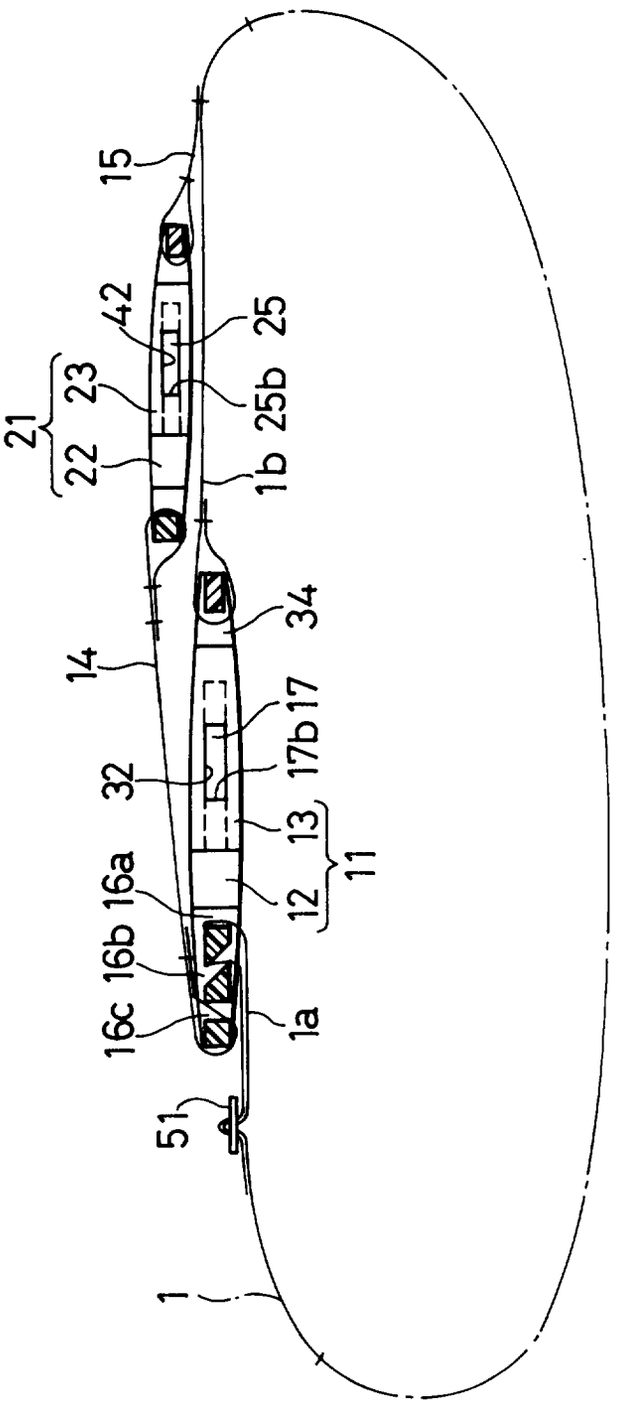
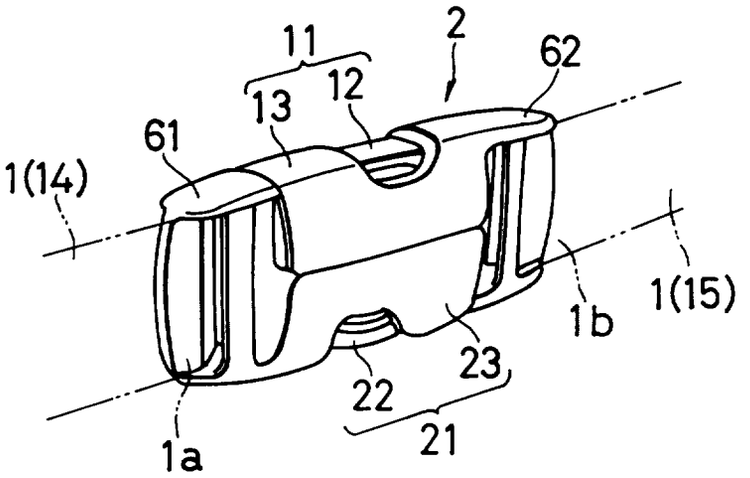


FIG. 3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12
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1b
1(15)
23
22
21
1a

FIG. 4

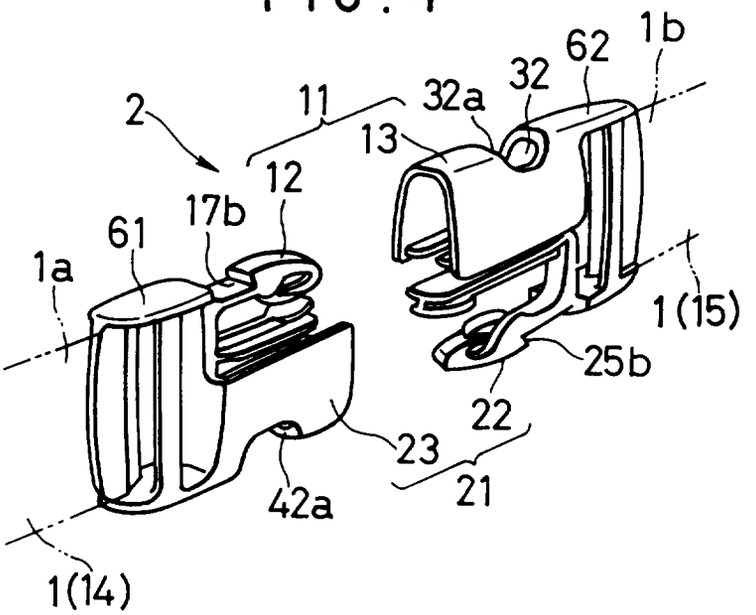
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FIG. 5