Aug. 24, 1965 G. H. JANTZEN 3,201,840

SAFETY BELT DEVICES

Filed May 20, 1963 3 Sheets-Sheet 1

Fig. 1.

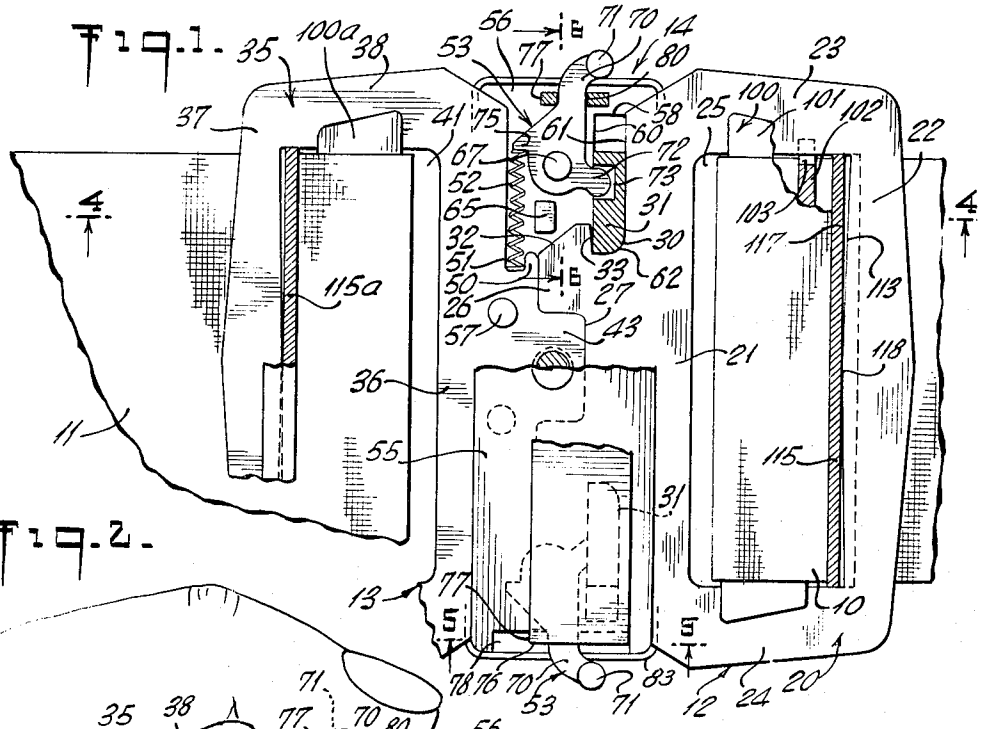
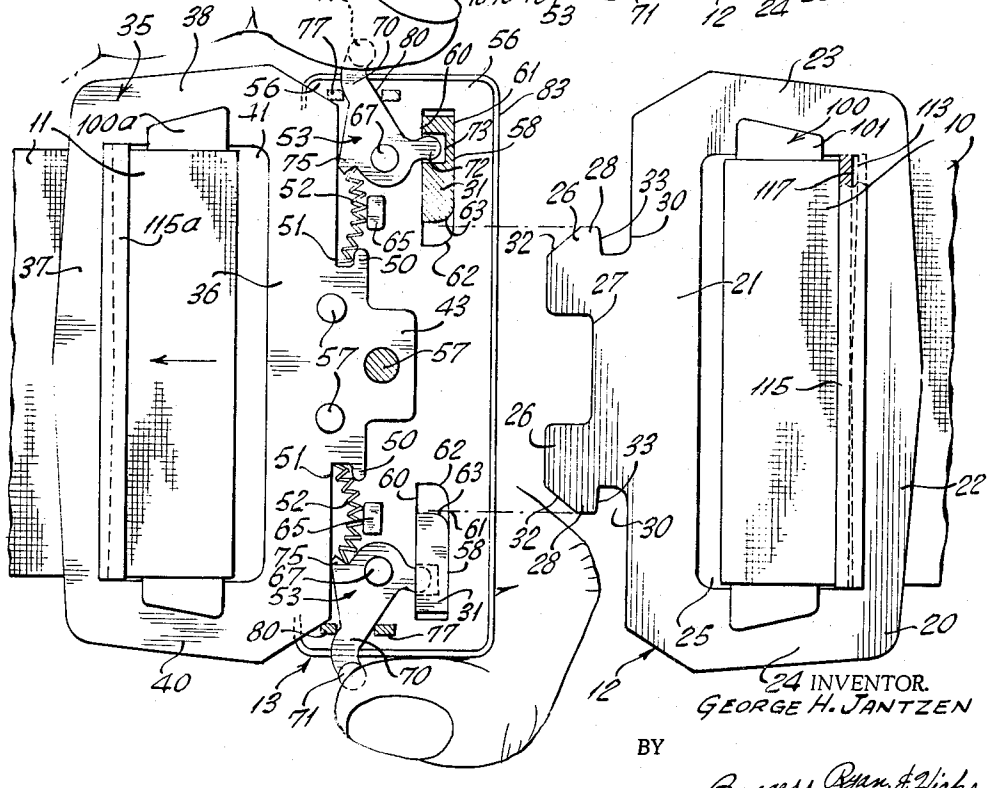


Fig. 2.



INVENTOR.
GEORGE H. JANTZEN

BY

Burgess, Ryan & Hicks
ATTORNEYS

Aug. 24, 1965 G. H. JANTZEN 3,201,840

SAFETY BELT DEVICES

Filed May 20, 1963 3 Sheets-Sheet 2

Fig. 3.

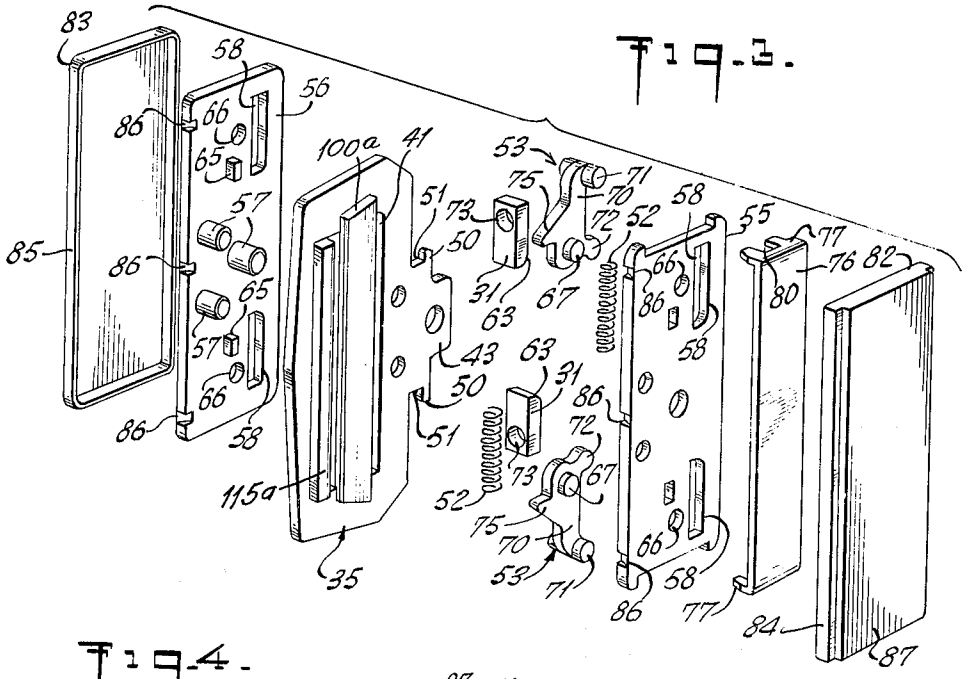


Fig. 4.

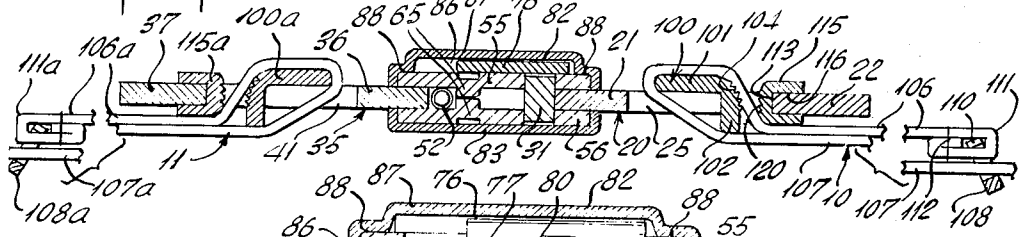


Fig. 5.

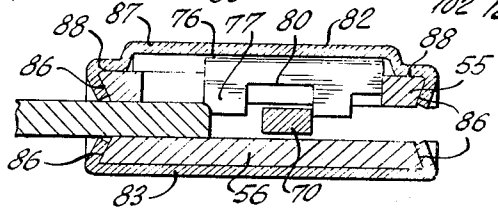
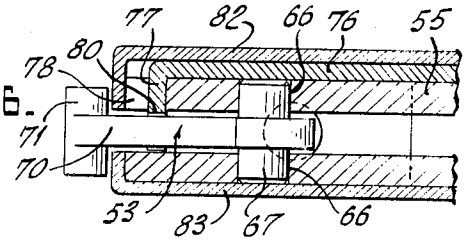


Fig. 6.



INVENTOR.
GEORGE H. JANTZEN

BY

Burgess, Ryan, & Hicks
ATTORNEYS

Aug. 24, 1965 G. H. JANTZEN 3,201,840

SAFETY BELT DEVICES

Filed May 20, 1963 3 Sheets-Sheet 3

Fig. 7.

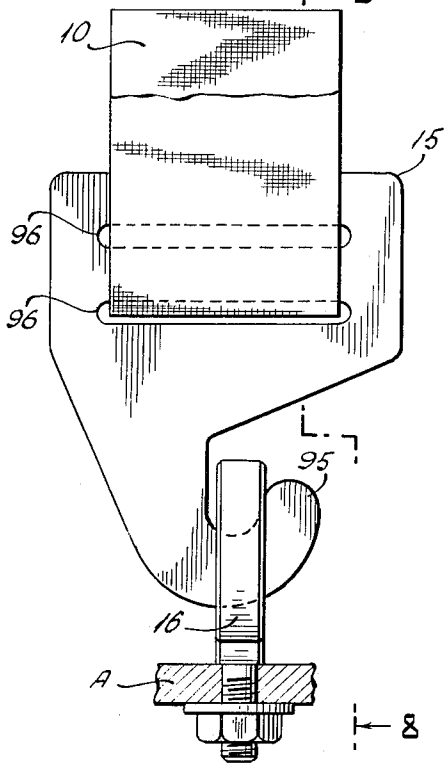


Fig. 8.

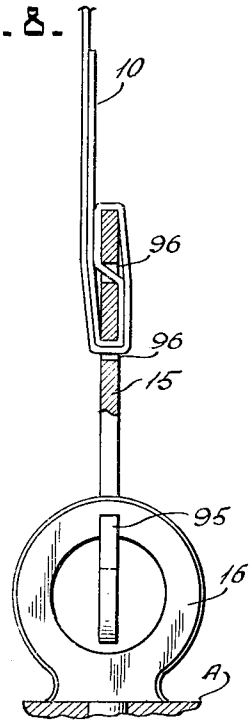


Fig. 9.

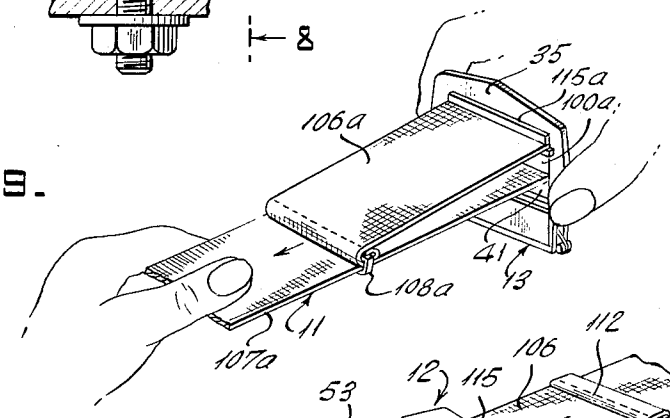
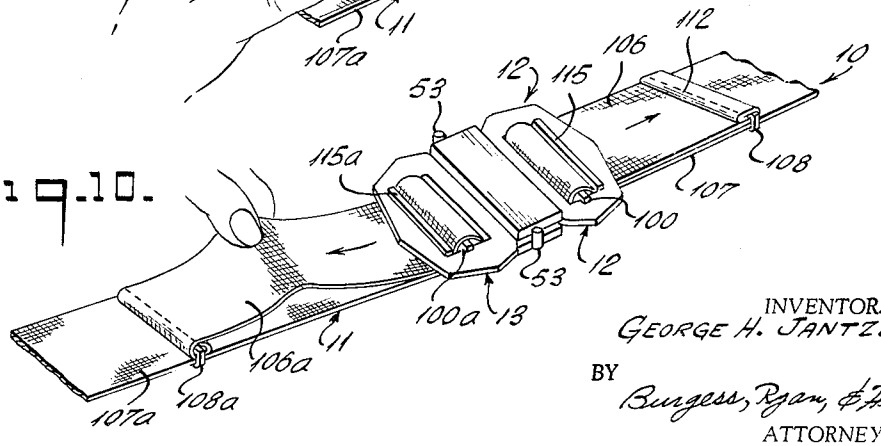


Fig. 10.



INVENTOR.
GEORGE H. JANTZEN

BY
Burgess, Ryan & Hicks
ATTORNEYS

United States Patent Office 3,201,840 Patented Aug. 24, 1965

3,201,840

SAFETY BELT DEVICES

George H. Jantzen, New York, N.Y., assignor to M. Steinthal & Co., Inc., New York, N.Y., a corporation of New York

Filed May 20, 1963, Ser. No. 282,537
6 Claims. (Cl. 24—230)

The present invention relates to safety belt devices for use in any field where such belt devices may be desirable, as for example in aircrafts, or for the front seats of motor vehicles.

Objects of the present invention are to provide a new and improved safety belt device, (1) which is constructed to resist maximum of pulling stresses with a minimum size device, (2) which can be releasably locked to the waist of a wearer by a simple latching operation of a buckle forming part of said device, (3) which requires simultaneous dual finger manipulations of the buckle to effect release of said buckle, so that the incidence of accidental release is eliminated or at least substantially reduced, (4) which is constructed to distribute stresses across the loaded belt in a manner to eliminate or at least materially reduce the possibility of tearing the belt at the sides or edges, (5) which can be adjusted by adjustments of the belt webs on opposite sides of the buckle in a manner to permit the buckle to be maintained centered on the body of the wearer, and (6) which is constructed to allow the belt to be easily removed from the buckle to permit said buckle to be replaced, repaired or cleaned without destroying or breaking any seams in the belt.

Various other objects of the invention are apparent from the following description and from the accompanying drawings, in which

FIG. 1 is a front outer view of the safety belt device of the present invention on an enlarged scale, and shows the buckle locked and the cover and frame parts of the buckle broken away to reveal the internal structure of the device;

FIG. 2 shows a front outer view of the safety belt device of FIG. 1 after the buckle has been manipulated into released position and shows some of the cover and frame parts of the buckle removed to disclose the interior structure of the device;

FIG. 3 is an exploded perspective view of one of the buckle parts constituting an embodiment of the present invention;

FIGS. 4, 5 and 6 are sections of the buckle taken approximately on lines 4—4, 5—5 and 6—6 respectively of FIG. 1, but shown on different scales;

FIG. 7 shows a plan view of a bracket and floor fitting which can be employed to attach the belt to the floor of a vehicle;

FIG. 8 is a section of the bracket and floor fitting taken on lines 8—8 of FIG. 7 and shows the belt threaded to the bracket;

FIG. 9 is a perspective showing the manner in which the belt web can be lengthened on a buckle part; and

FIG. 10 is a perspective showing the manner in which the belt web can be manipulated while the buckle is locked to tighten the belt or center the buckle.

Referring to the drawings, the safety belt device comprises generally two separate belt webs 10 and 11, adjustably connected to buckle parts 12 and 13 respectively adapted to be releasably locked together to form a buckle

14 by which said webs may be connected together. The ends of the belt webs 10 and 11 are connected to respective brackets 15 (FIGS. 7 and 8), which in turn are releasably attached to respective fittings 16 on the floor A of a motor vehicle on opposite sides of a front seat or on the floor of an airplane, or on any anchor site where the safety belt could be used.

The buckle part 12 constituting the male part of the buckle 14 comprises a flat substantially rectangular frame ring 20 having opposed end bar pieces 21 and 22 and opposed side bar pieces 23 and 24 integrally interconnected to form the one piece frame ring and defining therebetween a substantially rectangular oblong opening 25 to receive the belt web 10 in a manner to be described. Integral with the inner or front end bar piece 21 are two symmetrically arranged catches 26 in the form of hook teeth separated by a center rectangular recess 27. Each catch tooth 26 has a wing or extension 28 at its outer side separated from the outer edge of the bar piece 21 by a recess 30 serving as a crook to receive a spring-pressed slide latch bolt 31 on the buckle part 13 in locked position of the buckle 14, as will be described more fully hereinafter, and a bevelled edge 32 on one corner serving as a cam edge to move said latch bolt out of the way, as the buckle part 12 is inserted into the buckle part 13 in the process of locking the two buckle parts 12 and 13 together. To facilitate the entry of the springpressed latch bolts 31 into the recesses 30 during the locking of the buckle parts 12 and 13 together, the rear edge 33 of each tooth slants slightly rearwardly towards the longitudinal center of the buckle part 12, to taper the recess 30 towards the center of the buckle part, as for example, about 2°. With this tapering construction of the recess 30, the entry ends thereof are slightly wider than the width of the latch bolts 31, to ease entry of the bolts therein, while the base ends of the recesses are wide enough to snugly receive the bolts in fully locked position of the buckle 14.

The other buckle part 13 constituting the female part of the buckle 14, comprises a flat substantially rectangular frame ring 35 similar in shape and size to the frame ring 20 and having opposed end bar pieces 36 and 37 and opposed side bar pieces 38 and 40, integrally interconnected to form the one piece frame ring and defining therebetween a substantially rectangular oblong opening 41 to receive the belt web 11 in a manner to be described. Integral with the outer end bar piece 36 is a projecting center piece formed to define a center tooth or tongue 43 serving as a support for the catch teeth 26 when meshing therewith in locked position of the buckle 14 and having a width slightly smaller than the width of the recess 27 to permit the tooth to fit in said recess with a snug slide fit. Also, the length of the catch supporting tooth 43 is substantially the same as the depth of the recess 27, so that the tooth 43 and the catch teeth 26 will intermesh into conforming engagement along the front and inner sides of the catch teeth in locked position of the buckle 14, as shown in FIG. 1.

The catch supporting tooth 43 has integral therewith side ears 50 spaced from the front edge of the bar piece 36 by recesses 51 to receive one end of coil springs 52 bearing at the other ends against finger levers 53, operable by finger manipulation to slide the latch bolts 31 into buckle releasing position, as will be described more fully.

To support and confine the movable operative elements of the buckle part 13 and to form a guide or sock-

et for the other buckle part 12 during the movement of the buckle parts 12 and 13 into locked position, there are provided two flat frame plates 55 and 56 substantially of rectangular oblong shape, rigidly secured to the forward end of the frame ring 35 on opposite faces thereof in facially confronting registered relationship by means of press-fitted or peened pins or rivets 57 passing through said plates and through the ring in the regions of the bar piece 36 and the catch supporting tooth 43. The distance between the frame plates 55 and 56 is slightly greater than the thickness of the catch teeth 26, to permit said teeth to be inserted between said plates with a free slide fit, when the buckle parts 12 and 13 are brought together to lock them.

Each of the frame plates 55 and 56 has two openings 58 elongated in a direction cross-wise of the buckle 14, and each having parallel sides 60 and 61, the forward side 61 merging into a curved edge 62 at the bottom of the corresponding opening 58 to conformably receive the correspondingly curved edge 63 of the end of the latch bolt 31, as will be more fully described. The openings 58 in the two frame plates 55 and 56 are in registry.

To support the coil springs 52 against excessive buckling while the buckle parts 12 and 13 are being manipulated for release, and to confine the springs against accidental displacement, each of the frame plates 55 and 56 is depressed in two regions thereof to form two projections 65 meeting the projections 65 similarly formed on the other frame plate to conjointly form abutments for the intermediate sections of the springs when depressed for buckle releasing action, as shown in FIG. 2.

To support the finger levers 53 on and between the frame plates 55 and 56, each of these frame plates has two holes 66 serving as bearing for two pivot pins 67 secured to the finger levers 55.

Each of the finger levers 53 fits between the two frame plates 55 and 56 with easy rotative fit and is in the form of a bell crank having one arm 70 projecting beyond one side of the frame plates and having a finger piece 71 secured to the outer end of said arm, and having another arm 72 extending into a recess 73 in the corresponding latch bolt 31 with a rotative fit.

Each of the latch bolts 31 is in the form of a bar of substantially rectangular cross-section and has a width in a direction parallel to the planes of the frame plates 55 and 56 slightly less than the widths of the openings 58 in said plates so as to cause said latch bolt to slide in and along the corresponding opening with a snug free slide fit and has a depth in directions transverse to said planes greater than the distance between the inner confronting faces of said plates and slightly smaller than the distance between the outer faces of said plates, to assure slide contact of said latch bolt with the sides 60 and 61 of the registering openings 58.

A projection 75 on each bell-crank lever 53 constituting in effect a third arm of the lever, defines a shoulder against which the corresponding coil spring 52 bears. The bell-crank levers 53 are normally urged by the springs 52 in position in which the latch bolts 31 are pressed inwardly against the bases of the openings 58, as shown in FIG. 1, and are operated by hand against the action of said springs to release said latch bolts from this position, as shown in FIG. 2.

In order to lock the two levers 53 together for operation in unison, there is provided a slide 76 in the form of a U-shaped stirrup, straddling the frame plate 55 and having short legs 77 extending into recesses 78 at the ends of the frame plate and provided with respective notches 80 to receive the arms 70 of the levers 53 respectively. These plate recesses 78 are wider than the slide 76 to permit the slide to move in response to the manipulation of the levers 53 along the buckle 14. The slide 76 when operated by a single lever 53 tilts relative to the frame plate 55 and jams thereon, thereby preventing said lever from completing its releasing operation. By means of the slide 76, the levers 53 are prevented from being operated separately, thereby assuring against accidental release of the buckle 14 by the accidental turning of only one lever.

To decoratively conceal the frame plates 55 and 56 and the structures supported thereby, and to confine the slide 76 against the plate 55 in straddling position, there are provided two covers 82 and 83 of substantially oblong rectangular shape corresponding to the shape of these plates and having rims 84 and 85 respectively around the edges. These covers 82 and 83 are fitted snugly over the plates 55 and 56 respectively and are secured thereto by crimping the rims 84 and 85 into notches 86 on the edges of said plates. The front cover 82 fits over the slide 76 and is deeper than the cover 83 to provide a clearance 86 between the base wall 87 of the cover 82 and the outer face of the plate 55 for the slide 76, as shown in FIGS. 4 and 5. An offset in this wall 87 of the cover 82 forms a shoulder 88 seating against the margin of the frame plate 55 to assure the formation of this clearance when the cover 82 is pressed and crimped into position over said frame plate.

In the operation of the buckle 14, when the buckle parts 12 and 13 are separated, the latch bolts 31 will be in innermost positions in the openings 58 under the action of the springs 53. To lock the buckle parts 12 and 13 together, the parts are brought together, so that the catch teeth 26 on the buckle part 12 slide edgewise in between the frame plates 55 and 56 relative to the buckle part 13. During this sliding operation, the tooth 43 on the buckle part 13 enters the recess 26 on the buckle part 12 and the bevel edges 32 on the catch teeth 26 engage the curved edges 63 at the inner ends of the latch bolts 31 and cam the latch bolts outwardly against the action of the springs 52, until the recesses 30 behind said catch teeth 26 register with said latch bolts, whereupon these latch bolts, under the action of the springs, will snap into said recesses 30 and lock the two buckle parts 12 and 13 together, as shown in FIG. 1.

In locked position of the buckle parts 12 and 13 shown in FIG. 1, the tooth 43 snugly fitting in the recess 27, holds the buckle parts against relative movement sideways, and the tooth 43 serves as a compression member or column, supporting the catch teeth 26 against the bending stresses applied to said catch teeth 26 by the latch bolts 31, as the two buckle parts are pulled apart lengthwise of the buckle. As a result, the locking stresses in the buckle 14 in the direction to separate the buckle parts 12 and 13 are mostly in shear, and the buckle, therefore, is able to withstand more separating pull on the buckle, than would be possible, if the teeth 26 were not supported against edgewise bending.

To release the buckle parts 12 and 13, all that is necessary is to engage the finger pieces 71 on the sides of the buckle 14 projecting beyond the covers 82 and 83 with the thumb and forefinger and to draw these finger pieces to the left (FIG. 1) along the opposite sides of the buckle, thereby turning the levers 53 about the axes of their pivotal supports against the action of the springs 52. Since the levers 53 are interconnected by the slide 76, the two levers must operate together, and the releasing operation described moves the latch bolts 31 out of the recess 30 simultaneously, thereby freeing the catch teeth 26 for withdrawal from the buckle part 13, as shown in FIG. 2.

The belt webs 10 and 11 are so connected to the buckle parts 12 and 13 respectively as to permit the buckle 14 to remain centered about the waist of the wearer in spite of adjustments in the lengths of the webs and to permit the easy removal of the buckle parts from the webs for removal, repair or cleaning, without destroying the webs. Also, the buckle parts 12 and 13 are so constructed as to distribute the tensional stresses applied to the webs 10 and 11 cross-wise outwardly from the longitudinal center thereof to the sides thereof, thereby reducing the likelihood

of the webs being torn on the sides or edges due to a concentration of tensional stresses on these sides.

To permit easy removal of the webs **10** and **11** from the buckle parts **12** and **13** and to permit adjustments in the effective lengths of the webs while maintaining the buckle **14** centered on the wearer's waist, these webs are free from sewing attachment to the floor anchorage. For anchorage to the floor, there is screwed to the floor A (FIGS. 7 and 8) of the motor vehicle on opposite sides of the front seat somewhat rearwardly of the seat, or to the floor of an aircraft, or to any other point of securement, the two fittings **16**, shown in the form of eyebolts, and attached to each end of the web **10** and **11** is the bracket **15**. The bracket **15** is shown in the form of a flat plate having a hook **95** at its lower end for engagement with the fitting **16** and having a pair of parallel slots **96** through and around which the web **10** or **11** may be looped and threaded, as shown in FIG. 8, to retain frictionally one end of the web anchored to the floor.

The other end of each belt web **10** and **11** is releasably attached to the corresponding buckle parts **12** and **13**. For effecting attachment of the web **10** to the buckle frame ring **20**, said buckle frame ring carries a web keeper **100** in the form of an angle bar having an outer flange **101** long enough to seat at its ends on the outer faces of the side bar pieces **23** and **24** and having a flange **102** passing through the opening **25** of the ring and long enough to seat at its ends on the inner faces of the side bar pieces **23** and **24**. The ends of the flange **102** are provided with notches **103** to receive the edges of the bar pieces **23** and **24** with a slide fit, and although the two flanges **101** and **102** are longer than the height of the opening **25** between the two bar pieces **23** and **24**, the flange **102** is sufficiently shorter than the flange **101** to permit the keeper **100** to be slipped on and off into sliding interlock with the keeper by tilting the keeper in relation to the opening **25** so that it extends diagonally thereof and lifting the keeper from the opening.

The flanges **101** and **102** have an external interconnecting contour **104** over which the belt web **10** passes as it is looped over the keeper **100**, as shown in FIG. 4. To afford a gripping surface along the curved contour **104** for the belt web **10**, the surface along said contour is fluted or knurled lengthwise of the flanges **101** and **102**.

The end portion of the belt web **10** is threaded through the opening **25** from the inner face of the buckle **14** which comes in contact with the wearer's waist, passes over the outer face of the flange **101** of the keeper **100**, is threaded through the section of the opening **25** between the keeper and the outer end bar piece **22** of the frame ring **20**, so that said belt portion loops around said keeper, passes over the knurled surface **104** of the keeper, passes underneath and across the inner surface of the bar piece **22** and terminates in an outside belt end section **106** overlying the body section **107** of the belt. To hold this end section **106** of the web **10** against or close to the body section **107** of the web and in longitudinal alignment therewith, and to afford a rigid grip at the end of the belt web by which said web can be manipulated for belt web adjustment, there is provided a clip **108**. This clip **108** is in the form of a U-shaped bar having its ends **110** turned inwardly and secured to the end **111** of the belt web **10** by looping said web end around the ends **110** of the clip **108** and stitching at **112**. The body section **107** of the belt web **10** is threaded through the clip **108** which is slidable along said body section.

As the belt web **10** is tensioned, the keeper **100** is moved by the tension of the web looped around the keeper towards the inner edge **113** of the outer end bar piece **22** of the frame ring **20**. This tension transmitted to the sides of the belt web **10** where said web passes through the opening **25** adjacent to the bar piece **22**, tends to tear the web at these sides. Any pull on the web **10** in directions out of line with the longitudinal center line of the web will cause the web to be twisted, thereby concentrating tensional stresses on one or the other side of the web where said web passes through the opening **25** and bears against the bar piece **22**. This condition aggravates the tendency to tear the web **10** at these sides.

To distribute the stresses across the belt web **10** in the vicinity of the buckle **14** where it passes through the opening **25**, and prevent thereby the destructive actions on the sides of the web described, there is provided a floating channel bar **115**, straddled over the inner edge **113** of the bar piece **22**. The bar **115** is just long enough to fit easily in the opening **25** between the side bar pieces **23** and **24** of the frame ring **20**, with the ends of said bar contacting said bar pieces, so that said bar can slide along said opening, and has a channel **116** which is wide enough to straddle the inner edge **113** of the bar piece **22** with a snug slide fit along said bar pieces and which has a straight flat base **117**. The inner edge **113** of the bar piece **22** slopes from its center **118** outwardly towards the ends of the bar piece, so that this center constitutes the peak of this edge and the channel bar **115** can bend symmetrically about said center when the web **10** is subjected to longitudinal load centralized along the longitudinal center of the web or can rock from side to side about this center when the load is angularly applied to the web. The side sections of the inner edge **113** on opposite sides of the center **118** may slope approximately 1° to produce the desirable effects to be described.

With the construction described, when the tension on the belt web **10** is centralized along the web, the force of this tension applied to the float bar **115** causes this bar to bend slightly symmetrically about the peak **118** of the bar piece edge **113**, so that the greatest stretch on the web is applied along the longitudinal center of the belt, where the web is best capable of withstanding the stress, causing this center of the web to thin out and the stress to be distributed outwardly cross-wise of the web from this center towards the side but at diminishing values. Under these conditions, the stress is least at the sides of the web **10**, so that destructive stresses are kept away from these web sides.

In case the stresses are applied to the belt web **10** angularly, the floating bar **115** will tilt about the peak **118** of the inner edge **113** of the bar piece **22**, so that the bar will assume a direction substantially at right angles to the longitudinal direction of the web in spite of the askewed pull on the web, thereby presenting a bearing surface for the web on the float bar at right angle to the direction of the load. This prevents the application of concentrated excessive stresses on the sides of the belt web **10** tending to tear the web on these sides.

The floating bar **115** serves not only as a stress distributor for the belt web **10** as described, but also serves as a means for aiding the holding of the web against longitudinal displacement when subjected to stress. For that purpose, the back **120** of the bar **115** against which the web **10** rubs in its passage through the frame ring opening **25** is knurled, fluted or otherwise roughened to present a gripping surface for said web.

The belt web **11** is attached to the buckle frame ring **35** of the buckle part **13** by means similar to those described for attaching the belt web **10** to the buckle frame ring **20** of the buckle part **12**. For that purpose, there is provided a web keeper **100***a* similar to the web keeper **100** and similarly mounted on the buckle frame ring **35**. Also, there is associated with the buckle frame ring **35** a floating bar **115***a*, similar in construction to the floating bar **115** associated with the buckle frame ring **20**, and serving a similar function. A clip **108***a* similar to the clip **108** is attached to the end **111***a* of the belt web **11** and serves to hold the end section **106***a* of said web **11** against the body section **107***a* of said web **11**, in a manner indicated in connection with the clip **108** and the web **10**.

The end portion of this web **11** is arranged with respect to the buckle frame ring **35**, the keeper **100***a*, the floating

bar **115***a* and the clip **108***a* in the manner described in connection with the end portion of the belt web **11**.

With the arrangements of the belt webs **10** and **11** with respect to the buckle parts **12** and **13** described, it is possible to adjust the length of the belt and still maintain the buckle **14** in centered position on the waist. If, for example, it is desired to lengthen the belt web on either side of the buckle **14**, the procedure shown in FIG. 9 can be followed. For that purpose, assuming that it is desired to lengthen the web **11**, the buckle part **13** is tilted in a plane substantially at right angles to the plane of the web and the body section **107***a* of the belt web is pulled, causing the end section **106***a* of the web to become foreshortened.

To tighten the belt web **10**, all that is necessary is to pull the end section **106***a* of the web **11**, as shown in FIG. 10 to lengthen said web section.

By performing the necessary adjustments of both webs **10** and **11**, it is possible to obtain the necessary belt tightness, while still retaining the buckle **14** in the center of the applicant's waist.

Also, it should be noted that since neither of the webs **10** or **11** is sewed to any part of the buckle **14**, the buckle can be separated entirely from the webs for replacement, repair or cleaning, without destroying the webs.

Moreover, it should be noted that the buckle of the present invention is so constructed and designed, that it may be released easily even if worn upside down or even though the buckle may roll over in a crash.

While the invention has been described with particular reference to a specific embodiment, it is to be understood that it is not to be limited thereto but is to be construed broadly and restricted solely by the scope of the appended claims.

What is claimed is:

1. A safety belt buckle comprising a pair of separable buckle parts, one of said buckle parts comprising a pair of catch teeth separated by an intervening recess, each of said teeth having a catch recess on its outer side, the other buckle part comprising a pair of latch bolts slidable into and out of said catch recesses respectively when said buckle parts are together, said catch teeth being urged angularly edgewise towards each other by the bending action of the latch bolts thereon when in locking position in said catch recesses upon the pulling of said buckle parts away from each other in directions along the length of the buckle, spring means urging said latch bolts into said recesses respectively when said buckle parts are together and a support tooth having a shape to fit said intervening recess snugly to mesh with said catch teeth and to support said teeth against said bending action when said buckle parts are locked together and when said catch teeth are subjected to stresses resulting from separating pull on said buckle parts, whereby said catch teeth are subjected mainly to shear stresses during such pull, said catch teeth and said support teeth being in relative position to intermesh upon movement of said buckle parts relatively towards each other, and hand-controllable means for moving said latch bolts out of said catch recesses against the action of said spring means to permit said buckle parts to be separated.

2. A safety belt buckle as described in claim **1**, said hand-controllable means comprising a pair of bell-crank levers pivotally carried by the buckle part which comprises said latch bolts, each of said bell-crank levers having one arm extending laterally of said directions in an accessible position to serve as a finger-piece movable along said directions and having the other arm pivotally secured to the corresponding latch bolt, whereby movements of said finger-pieces along one of said directions move said latch bolts out of said catch recesses, said spring means comprising a pair of springs acting on said bell-crank levers respectively.

3. A safety belt buckle comprising a pair of separable buckle parts, latch means automatically operable when said buckle parts are brought together for locking said buckle parts together against separation, and hand-controllable means for releasing said latch means to permit said buckle parts to be separated, said hand-controllable means comprising a pair of finger-pieces spaced on the buckle, and means for blocking the operation of said finger-pieces except upon simultaneous operation of said finger-pieces, one of said buckle parts comprising a frame member, said blocking means comprising a slide engaging both of said finger-pieces and guided along said frame member, said slide being tiltably jammed against said frame member when operated by a single one of said finger-pieces and requiring the simultaneous operation of both of said finger-pieces to cause said slide to move along said frame member.

4. A safety belt buckle comprising a pair of separable buckle parts, latch means automatically operable when said buckle parts are brought together for locking said buckle parts together against separation, and hand-controllable means for releasing said latch means to permit said buckle parts to be separated, said hand-controllable means comprising a pair of finger-pieces spaced on the buckle, and means for blocking the operation of said finger-pieces except upon simultaneous operation of said finger-pieces, one of said buckle parts comprising a frame plate, said finger-pieces constituting respective arms of spring-pressed levers located near opposite sides of the buckle and pivotally supported on said frame plate, said blocking means comprising a slide in the form of a U-shape stirrup straddling the frame plate and having legs provided with respective openings to receive said finger-pieces, said slide being tiltably jammed against said frame plate when operated by a single one of said finger-pieces and requiring the simultaneous operation of both of said finger-pieces to cause said slide to move along said frame plate.

5. A safety belt buckle comprising a pair of separable buckle parts, one of said buckle parts being substantially flat and comprising a section at one end for attaching a belt web thereto and a pair of catch teeth at the other end separated by an intervening recess, each of said teeth having a catch recess on its outer side, the other buckle comprising a section at one end for attaching a belt web thereto, a support tooth having a configuration permitting it to be fitted into said intervening recess snugly into engagement with the inner sides of said catch teeth, a pair of flat frame plates rigidly secured to opposite outer faces of said support tooth to form a guide socket for said catch teeth and each having two openings, the openings in one frame plate registering with the openings in the other frame plate, two latch bolts in the path of said catch teeth as the two buckle parts are moved relatively toward each other, each of said bolts being guided in a pair of corresponding registering openings and being slidable therein into and out of the corresponding catch recess, when said buckle parts are brought together, two bell-crank levers located between said frame plates and pivotally supported on said frame plates, each of said bell-cranks having an arm extending beyond the corresponding side of said frame plates to serve as a finger-piece, the finger-pieces being located on opposite sides of the frame plates, the other arm being pivotally connected to the corresponding latch bolt, a pair of springs supported in between said frame plates, each of said springs bearing at one end on a corresponding support rigid with said frame plates and at the other end against the corresponding bell-crank to urge the corresponding latch bolt towards the corresponding catch recess when said buckle parts are together, and cam means for moving said latch bolts out of the paths of said catch teeth against the actions of said springs as the two buckle parts are moved relatively towards each other until the catch recesses reach positions opposite said latch bolts, whereupon said latch bolts snap into said catch recesses under the action of said springs to lock said buckle parts against separation.

6. A safety belt buckle as described in claim **5**, com-

prising means for blocking the operation of said finger-pieces except upon simultaneous operation of said finger-pieces, comprising a slide engaging both of said finger-pieces and guided along one of said frame plates.

References Cited by the Examiner

UNITED STATES PATENTS

312,679	2/85	Wagner	24—182
2,644,994	7/53	Smith	24—182
2,847,748	8/58	Robinton	24—230.4
2,919,481	1/60	Finken et al.	24—196
2,936,500	5/60	Elsner	24—196

2,988,797	6/61	Gaylord	24—230.1
2,999,288	9/61	Warner et al.	24—77
3,090,092	5/63	Szemplak et al.	
3,118,208	1/64	Wexler	24—230.1

FOREIGN PATENTS

210,304	9/57	Australia.
96,026	9/22	Switzerland.
961,402	11/49	France.
1,149,227	7/57	France.
1,162,639	4/58	France.

DONLEY J. STOCKING, *Primary Examiner.*