

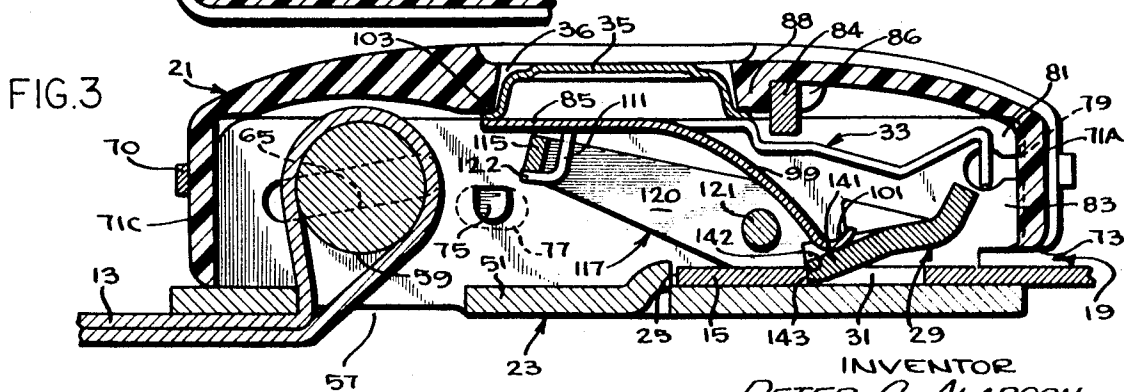
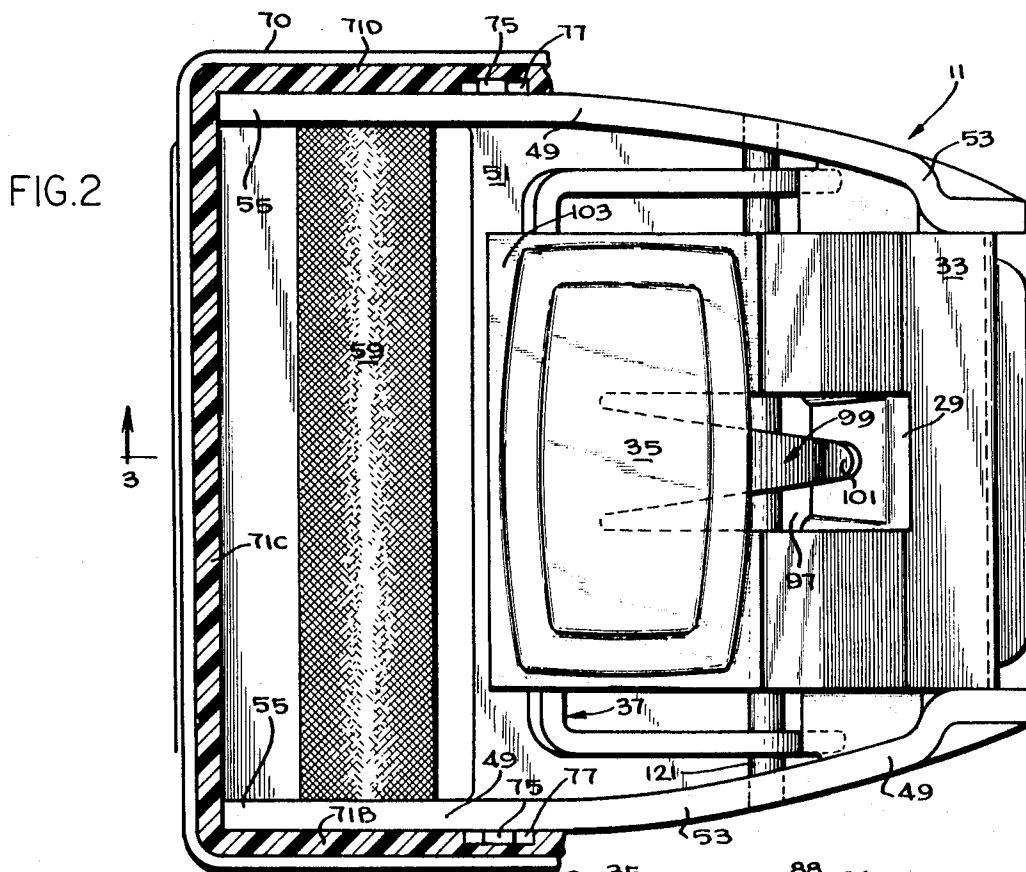
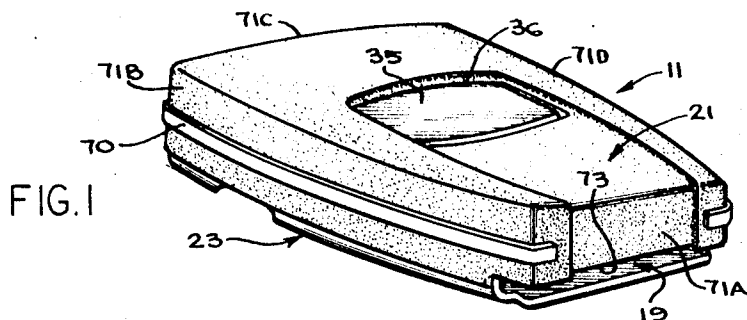
Sept. 20, 1971

P. G. ALARCON
SAFETY BELT BUCKLE

3,605,209

Filed Feb. 24, 1970

2 Sheets-Sheet 1



INVENTOR
PETER G. ALARCON

Anderson, Lyndell, Fitch, Egan & Talbot
ATTYS

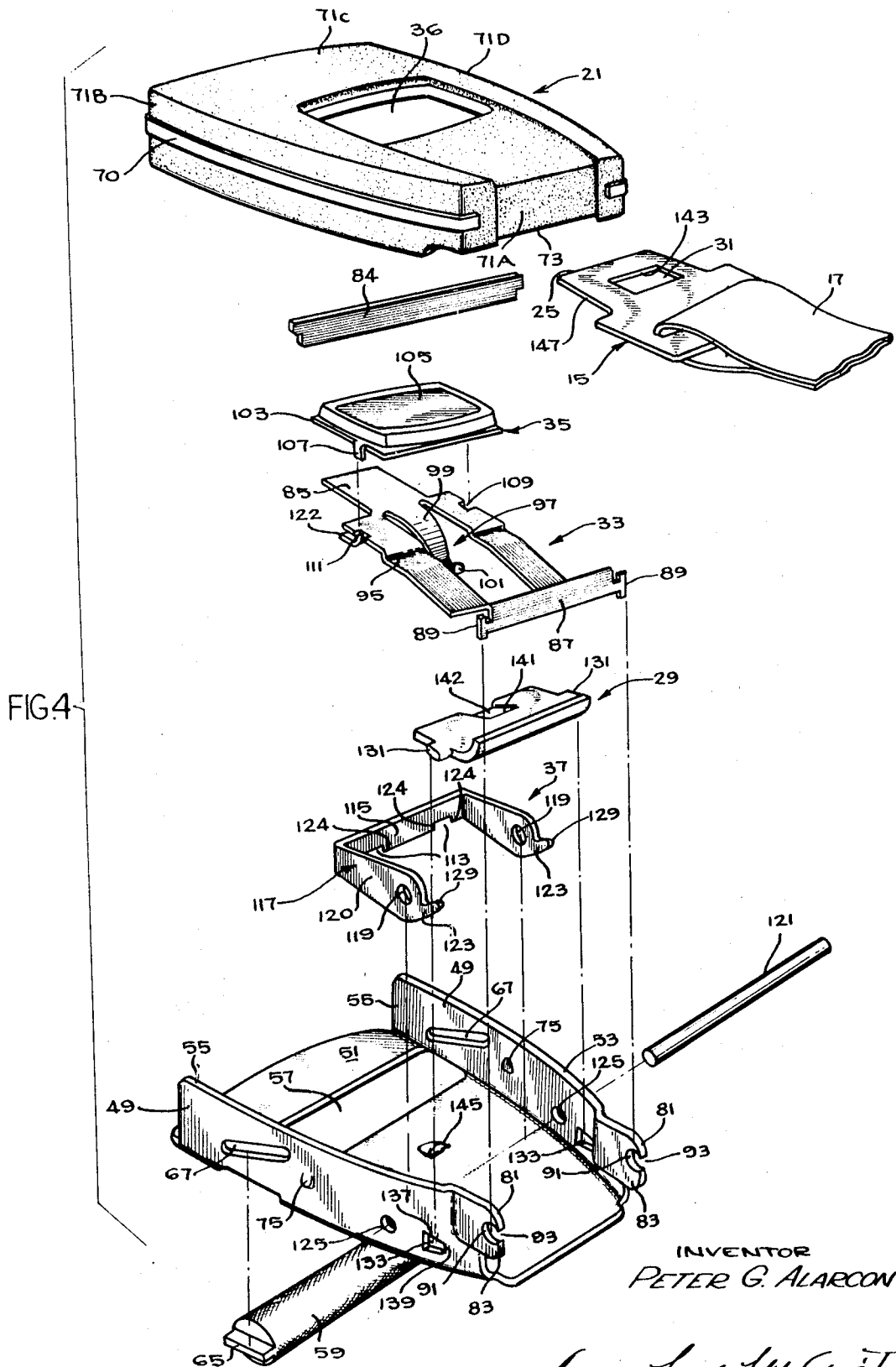
Sept. 20, 1971

P. G. ALARCON
SAFETY BELT BUCKLE

3,605,209

Filed Feb. 24, 1970

2 Sheets-Sheet 2



INVENTOR
PETER G. ALARCON

Anderson, Lucretia, Fitch, Eben & Talbot
ATTYS.

1

3,605,209 SAFETY BELT BUCKLE

Peter G. Alarcon, Colorado Springs, Colo., assignor to
Gateway Industries, Inc.
Filed Feb. 24, 1970, Ser. No. 13,389
Int. Cl. A44b 11/26

U.S. Cl. 24-230

9 Claims

ABSTRACT OF THE DISCLOSURE

A push button safety belt buckle is provided with a latch dog operating mechanism which is coupled together to remain in working relationship should a cover be removed or broken. The push button operating mechanism is positioned in a cavity in the buckle to permit a considerable inward movement of the push button and to provide a good mechanical advantage so that the push button may be easily operated with a light operating force from women or children.

This invention relates to a safety belt buckle and, more particularly, to a safety belt buckle of the push button kind used to fasten together ends of seat belts used in automobiles, airplanes, or the like.

Push button seat belt buckles which meet federal safety standards for use in automobiles have a top cover with an opening in which is disposed a manually operable push button for depression by the wearer to operate a latch operating mechanism for releasing a tongue plate fastened to one end of the seat belt. The tongue plate is latched within the buckle by a latch dog until the operator depresses the push button to release the tongue plate for sliding outwardly of the buckle, thereby unfastening the seat belt. When the operator releases the push button, internal spring means returns the push button from its depressed position and returns the latch dog to a position for latched engagement with the tongue plate upon its reinsertion into the buckle.

Some push buckles have been relatively large in size and have weighed too much to be comfortable when resting in the wearer's lap. Buckles of heavy weight may also be dangerous at the time of an accident if unused buckles are free to fly through the air and strike a passenger. Smaller and lighter weight buckles are preferable not only from the standpoint of economy and comfort, but also from a safety standpoint.

In accordance with the present invention, the buckle may be quite small and be provided with a lightweight plastic cover for the latch operating mechanism. The latch operating mechanism is constructed to hold its internal operating components against rattling and to be independent of the cover for its operation, thereby assuring that the buckle remains operative should the cover be broken, damaged or completely removed. To these ends, the latch operating mechanism is formed of interlocked components held in operative relationship with one another even though the cover be removed.

In addition to being small and formed of interlocked elements, the push button buckle of the present invention is readily operable by women or children who can apply only a light operating force to the push button and yet overcome the resistance of the return spring force. To this end, the push button operating mechanism is constructed and positioned in the buckle cavity so as not to interfere with a substantial inward movement of the push button into the buckle cavity. The latch operating mechanism provides a good mechanical advantage and requires only a light operating force by a person depressing the push button through a long movement to over-

2

come the resistance of the spring force holding the latch dog in locking engagement with the tongue plate.

Accordingly, a general object of the invention is to provide an improved seat belt buckle of the push button kind.

Other objects and advantages of the invention will become apparent from the detailed description taken in connection with the accompanying drawings in which:

FIG. 1 is a perspective view of a safety belt buckle constructed in accordance with the preferred embodiment of the invention;

FIG. 2 is a plan view of the buckle shown in FIG. 1 with the top cover partly in section and partially broken away;

FIG. 3 is a sectional view of the buckle shown in FIG. 2 taken along the line 3—3 of FIG. 2; and

FIG. 4 is an exploded perspective view of the buckle of FIG. 1.

As shown in the drawings for purposes of illustration, the present invention is embodied in a seat belt buckle 11 which is fastened to one end of a belt webbing 13 and which includes a tongue plate 15 fastened to the end of a belt webbing 17 (FIGS. 3 and 4). The tongue plate 15 is of a size to fit an entry slot 19 formed at the right end of the buckle in FIGS. 1-3 between an upper cover 21 and a lower buckle base 23. As the tongue plate slides inwardly toward the inserted position shown in FIG. 3, its leading end 25 engages the underside of a latch dog 29 and pivots it upwardly until a latching opening 31 in the tongue plate is aligned with the latch dog 29, which then snaps into the latch opening 31 under the biasing force exerted by a spring member 33. With the latch dog 29 disposed within the latch opening, i.e., in its latching position, the tongue plate is held against retraction from the buckle. For the purpose of pivoting the latch dog to a position spaced from the tongue, i.e., to an unlatching and released position, the wearer depresses a push button 35 disposed in an opening 36 in the top cover 21 to pivot an actuating lever 37 which is operatively associated with the latch dog by a lost motion coupling.

In accordance with the present invention, the push button 35, the spring member 33, the actuating lever 37 and the latch dog 29 are coupled together in an interrelationship which is maintained should the cover 21, which is formed of a lightweight plastic, be removed or broken. Further, in addition to urging the latch dog 29 to its latching position, the spring member 33 supports the push button 35 under the opening 36 in the cover and centers the actuating lever 37 in the buckle base 23. It also urges the lever 37 and the push button 35 away from the buckle base 23 and holds them and the latch dog against rattling within the buckle. As will be explained, the buckle of the present invention is constructed to allow a substantial inward displacement of the push button to achieve with a light operating force a good mechanical advantage so as to operate within federal safety standards; yet it has relatively few simple elements which are readily assembled to provide an inexpensive, commercially feasible seat belt buckle.

Proceeding now with a more detailed description of the individual elements of the safety belt buckle, the buckle base 23 is, in this instance, in the form of a channel (FIG. 4) defined by a pair of upstanding flanges 49 extending longitudinally along and generally perpendicular to a central base plate 51 disposed between the flanges. The sizes of the buckle and of the tongue plate are preferably reduced by forming a smaller, tapered channel end to receive the tongue plate as contrasted to the channel and connected to the belt 17. More specifically, at the entry slot 19, the flanges 49 are spaced at a first distance and then diverge outwardly along inclined sections 53 to op-

posite end sections 55 which are parallel to each other but considerably farther apart than the first distance at the entry slot 19.

To facilitate attachment of the belt 13 to the buckle base 23, a belt opening 57 (FIGS. 3 and 4) is formed in the base plate 51 to admit a loop of the belt webbing 13 which is disposed about a transverse knurled rod 59 extending between the side flanges 49. The knurled rod has flattened ends 65 (FIG. 4) mounted for free sliding movement in elongated slots 67 formed in side flanges adjacent the location of the belt opening 57. These slots are inclined toward the base plate 51 so that the belt may be caught in the nip between the knurled rod 59 and the base plate. That is, exertion of tension force on the belt 13 pulls the knurled rod downwardly towards the base plate and tightens the grip on the belt. When it is desired to adjust the length of the belt, the tension in the belt is released and the knurled rod 59 is moved rearwardly and upwardly in the slots 67, whereupon the belt may be slid about the rod 59 to an adjusted position relative thereto.

The preferred cover 21 is formed with a decorative finish on the top wall, such as a grained leather-like surface, and is an integral, one-piece molded plastic cover which is extremely lightweight as compared to the weight of metal covers. The cover is made in one piece except for the addition of a lightweight decorative strip 70 of contrasting color added to the sides of the cover. Integrally connected to and depending from the top wall are four side walls 71A, 71B, 71C and 71D at the sides and ends of the buckle base 23. At the wide end of the buckle base, the depending cover side wall 71C extends to the plane of the base plate 51 to preclude insertion of the tongue plate into this wide end of the buckle base. At the narrow end of the buckle base, as best seen in FIG. 3, the depending cover side wall 71A terminates at an edge 73 spaced sufficiently above the central base plate 51 to define the slot 19 for admitting the tongue plate 15.

The cover 21 is preferably formed to be generally complementary in size to the buckle base 23 and to snap fit over locking projections 75 struck outwardly from the buckle base flanges. The inner vertical sides of the cover side walls 71B and 71D have small recesses 77 therein to receive the projections 75 and thereby lock the cover against removal from the buckle base. The projections 75 flex the cover side walls outwardly as the latter slide over the projections when the cover is forced down onto the buckle base. The rear depending cover wall 71A is also formed with a pair of notches 79 (FIG. 3) facing inwardly to receive a pair of vertically spaced ends 81 and 83 on respective base flanges 49. When attaching the cover to the buckle base, the ends 81 and 83 of the flanges 49 are first inserted into the notches 79 while the cover is held tilted up over the buckle base. Then, the cover is swung down with sufficient force to flex the cover side walls 71B and 71D out while sliding down to bring recesses 77 into alignment with the locking projections 75, at which time the flexed walls contract inwardly. In this position, the cover is held against removal by the end portions 81 and 83 seated in the notches 79 in the rear cover wall 71A and the projections 75 seated in the recesses 77 in the cover side walls 71B and 71D. To provide additional strength for the cover 21, particularly against an inward depression of the top cover wall at the central opening 36, a metal crush bar 84 may be inserted into a groove in the cover to span the buckle base side flanges 49. The crush bar is disposed between a pair of depending lugs 86 and a depending shoulder wall 88. The lugs 86 and wall 88 are integral with the cover and spaced apart a distance slightly less than the width of the crush bar to grip the latter when disposed therebetween.

With the cover 21 snapped onto the buckle base 23, the central opening 36 in the cover top wall is aligned with the push button 35 and provides access thereto and to a buckle cavity defined by the cover and buckle base. The push button may be attached to one end 85 of the

spring member 33 for vertical movement relative to the access opening 36 in the cover. The spring member 33 is disposed beneath the cover and extends generally longitudinally of the buckle base from the end 85 to a pivoted end 87 which is turned downwardly and extends laterally across the buckle base to ears 89 which project into openings 91 at the ends of the side flanges 49 at the narrow end of the buckle base. The openings 91 are generally circular except for narrow, slotted throats 93 in the flanges 49. The throats are narrower than the vertical height of the ears 89 so that the ears may not move rearwardly through the throats when the spring member 33 is in its assembled position in the buckle. Thus, if the cover should be removed or if the rear cover wall becomes broken, the ears 89 will remain in the openings 91 so long as the spring is held down. The spring member 33 is easily assembled on the buckle base by inserting the lower edge of the ears 89 through the throats 93, swinging the spring member toward the actuating lever 37 and then coupling the actuating lever 37 to the spring member 33 so that the latter may not reverse and pivot back to a position in which the ears could slide through the slots 93 and be detached from the buckle base. When so assembled, the spring member 33 pivots about an axis through the centers of the openings 91, which is parallel to the base plate 51.

To provide sufficient clearance and travel space, the spring member is formed to extend down and then up from its pivoted end 87 and then generally horizontally under the crush bar 84 to an upward bend 95 leading to the free end 85, which is generally parallel to the base plate 51. A central aperture 97 is formed in the spring member 33, and a leaf spring section 99 is formed within the opening with an upper wide end integral with the flat mounting portion 85 of the spring. The leaf spring section 99 has a lower curved end 101 which extends down to and bears against the top of the latch dog 29.

The preferred push button 35 is provided with a lower, generally horizontal flange 103 which rests on the flat spring end 85 and is provided with an upstanding center portion 105 which projects upwardly into the opening 36 in the cover but does extend so far therethrough as to be accidentally depressed, as best seen in FIG. 3. The preferred manner of attaching the push button to the spring member is by means of a pair of integral tabs 107 formed on the sides of the push button and projecting through notches 109 formed on the sides of the spring end 85. The tabs inserted into the notches hold the push button against forward or rearward shifting movement, and the free ends of the tabs are bent to extend beneath the spring end 85 to prevent the push button from separating from the spring end. In this instance, the forward edge of the push button is aligned with the forward edge of the spring end 85.

In accordance with an important aspect of the invention, the spring member 33 and actuating lever 37 are interconnected in a manner to operate independently of the cover 21 and to hold the actuating lever against rattling on the base plate 51. More specifically, a pair of interlock tabs 111 are bent down and then forwardly to extend beneath the lever 37 and into notches 113 (FIG. 4) formed on the underside of a cross bar 115 formed on the upper end of the actuating lever. The cross bar 115 is captured between the underlying interlock tabs 111 and the overlying spring end 85 to provide a sliding, non-binding connection so that upon depression of the push button the spring member slides across the top of the cross bar while the lever pivots downwardly.

The illustrated actuating lever 37 is a generally U-shaped, bail-like member having the upper cross bar 115 integral with a pair of downwardly inclined lever bars 117 which are apertured at 119 to receive a pivot shaft 121 intermediate the ends of lever bars, thereby form-

5

ing two lever arms 120 and 123 on each lever bar. The lower ends of the arms 123 project beneath the latch dog 29 to serve as lifting lever arms 123 for the latch dog 29. The upper arms 120 extend to the cross bar 115 for actuation by the push button 35. The spring member 33 centers the actuating lever 37 on the shaft 121 at a position in which the lever bars 117 are spaced from the flanges 49 of the buckle base 23. More specifically, tabs 111 on the spring member have vertical sides 122 for engaging vertical side walls 124 of the notches 113 and limiting lateral movement of the actuating lever 37 on the pivot shaft 121 thereby holding the lever in its operating position centered between and spaced from the flanges 49 of the buckle base 23. At the same time, the spring member 33 positions the push button 35 attached thereto centrally of the opening 36.

The pivot shaft 121 for the actuating lever 37 is mounted with its opposite ends inserted into circular holes 125 in the side flanges 49 of the base with the ends of the shafts bent over or swaged to prevent the axial sliding of the shaft through the holes. The pivot shaft is adjacent to but spaced above the base plate 51 and rearwardly of the push button position so that the upper lever arms 120 may experience substantial vertical displacement. Also, as best understood when viewing FIG. 3, the latch dog 29 and pivot shaft 121 are spaced rearwardly of the push button position thereby leaving a considerable cavity for unimpeded insertion of the push button by the person depressing the same. Thus, the push button may swing the long lever arms through a considerable arc. As the lifting lever arms 123 are relatively short compared to the upper lever arms 120, the actuating lever provides a force multiplication with the conversion of a light operating force through a long displacement of the upper arms into a much greater latch lifting force through a shorter displacement for the latch dog. Stated differently, a mechanical advantage is achieved and the force applied by the person to the push button may be reduced by converting a long movement of the upper arms 120 into a short displacement of the shorter lifting arms 123. The upper ends of the short lifting arms are curved to provide rolling contact surfaces 129 which have a rolling engagement with the underside of the latch dog 29 adjacent the outer edges thereof. This rolling contact reduces frictional losses and provides a smooth and silent operation.

The latch dog 29 is pivotally mounted by laterally projecting ears 131 which extend into openings 133 in the side flanges 49 adjacent the narrow end of the buckle base. The pivot ears are generally rectangular in cross section and define a pivotal axis which is substantially parallel to the pivotal axis for the actuating lever 37 and substantially parallel to the base plate 51. The latch dog 29 is limited in its upward swinging by the abutment of the ears 131 on the upper inclined walls 137 of the openings 133 in the side flanges. More particularly, the pivot ears 131 for the latch dog 29 pivot about lower rear end walls 139 in the openings 133 while at the opposite ends of the openings the ears 131 travel through arcs to bring the tops of the ears 131 against the inclined top walls 137.

The latch dog 29 is preferably formed by a stamping operation which depresses the central forward edge of the latch dog 29 and forms a downwardly inclined wall 141 (FIG. 4) which projects toward the base plate 51 to project into the opening 31 in the tongue plate 15. In this latching position, a leading edge 142 on the dog wall 141 abuts a front abutment wall 143 of the latch opening 31 of the tongue plate and resists pulling of the tongue plate 15 from the buckle. The tongue plate is limited from further insertion into the buckle by an upstruck, arcuately shaped stop 145 on the base plate 51. When the tongue plate is inserted, inclined longitudinally extending side edges 147 on the leading end of the tongue plate are spaced inwardly of the lifting arms 123 of the actuating lever 37 to be free of engagement therewith.

6

Upon operation of the release mechanism, the leading edge 25 of the tongue plate 15 is prevented from following the dog 141 upwardly by the pivot shaft 121 which serves as a stripper to strip the tongue plate from the dog 141 should the tongue begin to lift with the latch dog. If the tongue plate were free to be lifted by the dog, it might be difficult to withdraw the tongue plate in certain instances.

In order to assemble the buckle, the side flanges 49 of the buckle base 23 are sprung apart, and the pivot ears 131 of the latch dog 29 are inserted into the openings 133 in the side flanges. Release of the sprung side flanges permits them to return. The spring member 33 with an attached push button 35 is attached by inserting the ears 89 through the throat 93 and into the enlarged openings 91 at the ends of the side flanges of the buckle base and then pivoting the spring member forwardly until the ears 85 are vertical and the push button is horizontal. The interlocking tabs 111 on the forward edges of the spring member are hooked under the cross bar 115 of the actuating lever 37 to couple the spring member and actuating lever 37 together. The leaf spring section 99 then bears against the top of the latch dog 29. The pivot shaft 121 is passed through apertures 119 and 125, and the ends of the pivot shaft 121 are swaged over to prevent it from sliding from the holes 125 in the side flanges. The assembly is thereby held together in operable condition, even in absence of the cover 21. The upward travel of the arms 117 and push button 35 is limited by the arms 123 striking the upper surface of the base plate 51. Subsequently, the crush bar 84 is disposed in the groove in the cover 21. The cover is then attached to the buckle base by inserting the ends 81 and 83 of the side flanges 49 into notches 79 in the cover end wall 71A and pivoting the cover down and snapping the locking projections 75 on the flanges 49 into the recesses 77 in the cover side walls 71B and 71D.

As an aid to understanding the invention, a brief description of the operation of the seat belt buckle will be given. To fasten the belt ends together, the tongue plate 15 is aligned with the entry slot 19 of the buckle (FIG. 2) and is inserted therein and slid along the top surface of the base plate 51 to bring its forward edge 25 against the underside of the latch dog 29, pivoting it upwardly about its pivotal axis through the rearward ends of the pivot ears 131 of the dog. As the latch dog pivots upwardly, it flexes the leaf spring section 99. At the same time, the other end of the leaf spring section 99 acts through the spring member 33 to urge the long arms 120 of the lever 37 together with the attached push button 35 upwardly. The push button 35 is stopped in its upward travel as its surrounding flange 103 abuts the underside of the cover at the aperture 36.

When the tongue plate 15 is inserted to the point where the latch opening 31 is aligned with the leading edge of the dog 141, the dog snaps into the latching position under the urging of the leaf spring 99. The tongue plate is prevented from moving further inwardly by means of the upstanding lug 145 on the base plate 51. Also, the leaf spring section 99 acts through the latch dog 29 to hold the tongue plate 15 flat against the buckle base plate 51 so that the tongue plate does not rattle within the buckle.

When the wearer wishes to release the buckle, he manually depresses the push button 35 through the opening 36 in the cover while simultaneously exerting a retracting force on the belt end 17 and tongue plate 15. The push button 35 and spring member 33 pivot downwardly with the central flat portion 85 of the spring member abutting and sliding along the crosspiece 115 of the actuating lever 37 which pivot down towards the buckle base plate 51. As the actuating lever 37 pivots, its long upper arms 120 go down, and the shorter lifting arms 123 rise. The short lifting arms 123 pivot the dog 141 about a pivot axis through its pivot ears 131. If the tongue plate

tends to lift and follow the latching dog 29, the pivot shaft 121 for the actuating lever 37 abuts the tongue plate 15 and limits its motion. Thus, the latching dog 29 is free to pivot upwardly to its release position where the lower edge of the dog wall 141 is spaced above the tongue plate, which may then be removed.

After retraction of the tongue plate, the push button may be released whereupon the lower end of spring section 99 forces the latch dog 29 to swing downwardly toward the buckle base plate 51. The opposite end of the spring section 99 urges the spring member 33 carrying the push button 35 upwardly to abut the cover 21 and holds the same against the cover to prevent rattling of the push button 35 or the actuating lever 37 coupled thereto.

From the foregoing, it will be seen that the seat buckle provides force and distance multiplications which allow the seat belt buckle to be relatively slim, compact and lightweight. Interconnection of the spring member and the actuating lever for lifting the latch dog provides a rattle-free construction and a buckle which has a latch mechanism operable independently of the presence of cover. The use of the relatively few parts and the simple manner of construction of the seat belt buckle result in a low-cost construction and a buckle which is particularly suited to meet the required safety standards yet which is fully functional if the cover were to be removed or damaged.

While a preferred embodiment has been shown and described, it will be understood that there is no intent to limit the invention by such disclosure. Rather, various modifications and alternate constructions are within the spirit and scope of the invention.

What is claimed is:

1. A safety belt buckle comprising a buckle base having a central base plate and a pair of upstanding flanges extending along a pair of opposite sides of said base plate with means for securing belt webbing to the base, a cover secured to said base and extending between said flanges and having a top wall with an opening disposed substantially in its center, said buckle base and cover defining a buckle cavity having a tongue opening for insertion of a tongue plate, a tongue plate for insertion into said tongue opening and having an abutment wall defining a portion of an opening in said tongue plate for releasable connection to said buckle base, a latch dog pivotally mounted to said flanges within said buckle cavity and movable between a latching position in which said latch dog projects into said tongue plate opening and abuts said abutment wall and a release position in which said latch dog is retracted from said tongue plate opening, a lever with two lever arms pivotally mounted to said flanges within said buckle cavity intermediate the two lever arms, one arm thereof being coupled to said latch dog between the respective pivotal axes of said lever and said latch dog to move said latch dog to said release position, a spring member having two ends and pivotally mounted at one end to said buckle base within said buckle cavity, means coupling the other end of said spring member to the other arm of said lever to interlock said other end and said other arm independently of the presence of said cover, and a push button accessible through said cover opening to receive a pushing force from the wearer and coupled to said other end of said spring member within said buckle cavity to pivot said spring member and thereby said lever and said latch dog to the release position, said spring member having a leaf spring section engaging and biasing said latching dog toward its latching position and acting through said other end of said spring member to bias said other lever arm and said push button toward said cover.

2. A safety buckle in accordance with claim 1 in which portions of said spring member capture said other arm of said lever to hold said other arm of said lever and said other end of said spring member together and to permit relative sliding motion between said spring member and said lever, said spring member and said lever pivoting about different axes.

3. A safety belt buckle in accordance with claim 1 in which said first arm of said lever is formed with a curved surface having rolling contact with said latch dog.

4. A safety seat buckle in accordance with claim 1 in which said pair of upstanding flanges have openings at the ends thereof for pivotally mounting said spring member, and in which said spring member has ears on said one end projecting into said openings which ears can pass through said openings in the course of assembly, but upon being pivoted to the position coupling said other end of said spring member to said other arm cannot pass through said openings even if said cover is removed from said buckle base.

5. A safety belt buckle in accordance with claim 1 in which said cover is formed of a plastic material to be light in weight and in which a crush bar spans said upstanding flanges of said buckle base to strengthen said cover against inward deflection.

6. A safety seat buckle in accordance with claim 1 in which said means mounting said lever comprises a shaft spanning said upstanding flanges and disposed parallel to said central base plate, said lever being pivotally mounted on said shaft and being axially slidable thereon, and in which portions of said spring member position said lever on said shaft with said lever arms spaced from said upstanding flanges.

7. A safety belt buckle in accordance with claim 1 in which said push button travels downwardly along an unimpeded path towards said buckle base plate, said means pivotally mounting said lever to said flanges is positioned rearwardly of said push button path of travel in said buckle cavity and in which said latch dog is also positioned rearwardly of said push button travel so that the buckle cavity beneath the push button and said other arm of said lever is free of impediments to substantial displacements thereof.

8. In a safety belt buckle comprising a buckle base having a central base plate and a pair of upstanding flanges extending along a pair of opposite sides of said base plate, means connected to said base for securing a belt webbing to the base, said buckle base having an access opening for insertion of a tongue plate, a tongue plate for insertion into said access opening and having an abutment wall defining a portion of an opening in said tongue plate for releasable connection to said buckle base, a latch dog pivotally mounted on said buckle base and movable between a latching position in which said latch dog projects into said tongue plate opening and abuts said abutment wall and a release position in which said latch dog is retracted from said tongue plate opening, a lever with two lever arms pivotally mounted on said buckle base intermediate the two arms of said lever with one arm coupled to said latch dog to move said latch dog to said release position, a spring member pivotally mounted at one end to said buckle base and coupled at its other end to the other end of said lever to remain interlocked therewith, and a push button to receive a pushing force from the wearer and coupled to said other end of said spring member to pivot said spring member and thereby said lever and said latch dog to the release position, said spring member having a leaf spring section engaging and biasing said latching dog toward its latching position and acting through said other end of said spring member to bias said push button away from its pushed position.

9. A safety belt buckle comprising a buckle base having a central base plate and a pair of upstanding flanges extending along a pair of opposite sides of said base plate with means for securing a belt webbing to the base, a cover secured to said base and extending between said flanges and having a top wall with an opening disposed substantially in its center, a push button accessible through said cover opening to receive a pushing force from the wearer for displacement toward said base plate, said buckle base and cover defining a buckle cavity hav-

9

ing a tongue opening for insertion of a tongue plate, a tongue plate for insertion into said tongue opening and having an abutment wall defining a portion of an opening in said tongue plate for releasable connection to said buckle base, a latch dog pivotally mounted to said flanges within said buckle cavity at a position spaced from the path of said push button, said latch dog being movable between a latching position in which said latch dog projects into said tongue plate opening and abuts said abutment wall and a release position in which said latch dog is retracted from said tongue plate opening, a lever with two lever arms, means pivotally mounting said lever to said flanges within said buckle cavity intermediate the two lever arms, one arm thereof being coupled to said latch dog between the respective pivot axes of said lever and said latch dog to move said latch dog to said release position, a member having two ends and pivotally mounted at one end to said buckle base within said buckle cavity, means coupling the other end of said member to

10

the other arm of said lever, said push button being coupled to said other end of said member within said buckle cavity to pivot said member and thereby said lever and said latch dog to the release position, and spring means biasing said latching dog toward its latching position and acting through said member to bias said other lever arm and said push button toward said cover.

References Cited

UNITED STATES PATENTS

3,483,599 12/1969 Fisher ----- 24—230A

FOREIGN PATENTS

1,162,433 8/1969 Great Britain ----- 24—230A

BERNARD A. GELAK, Primary Examiner

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,605,209 Dated September 20, 1971

Inventor(s) Peter G. Alarcon

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 4, line 42, change "is" to --in--;
Column 6, line 22, change "atcuating" to --actuating--;
Column 7, line 65 and 66, change "latching" to --latch--;
Column 8, line 20, change "said means mounting said lever"
to --a means mounts said lever for pivotal move-
ment and--;
Column 8, lines 29 and 30, change "said means" to --a means
for.

Signed and sealed this 19th day of November 1974.

(SEAL)
Attest:

McCOY M. GIBSON JR.
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents