

May 5, 1964

F. L. DAVIS
SEAT BELT BUCKLE

3,131,446

Filed May 28, 1963

2 Sheets-Sheet 1

Fig. 1.

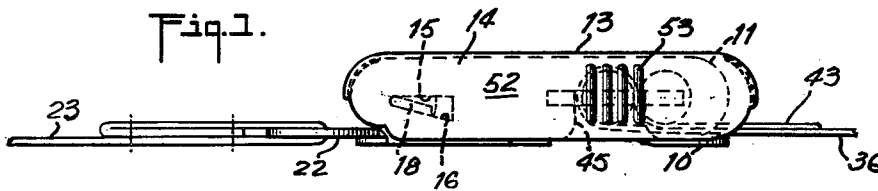


Fig. 2.

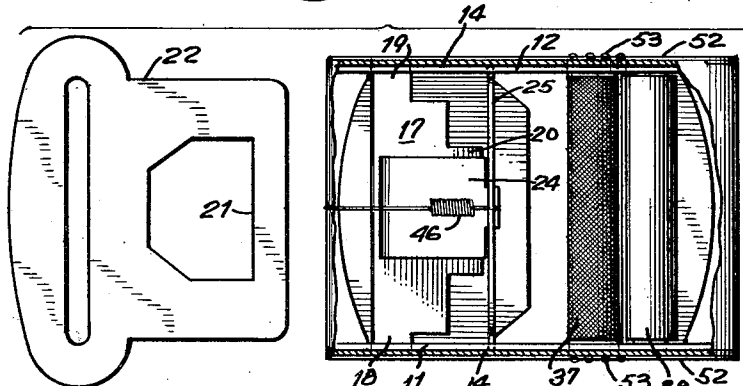
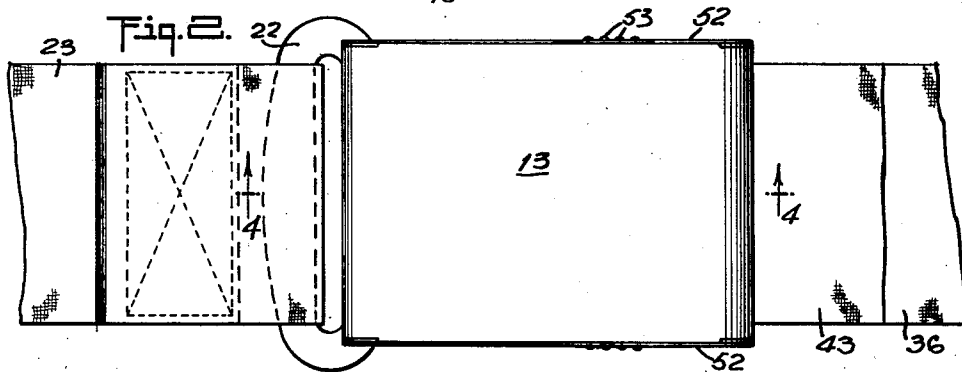
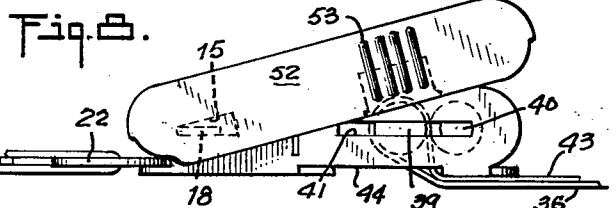
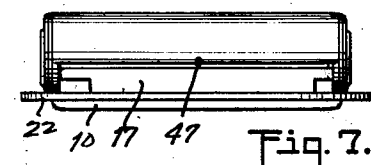
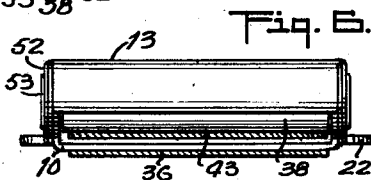
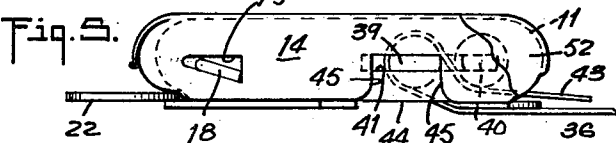
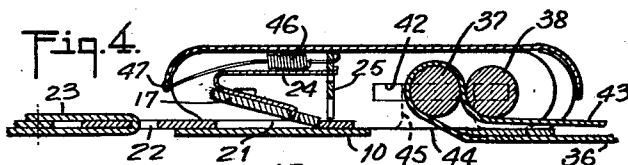


Fig. 3.



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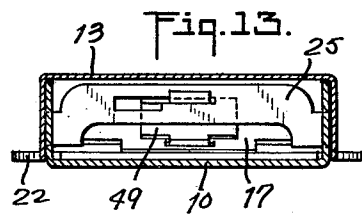
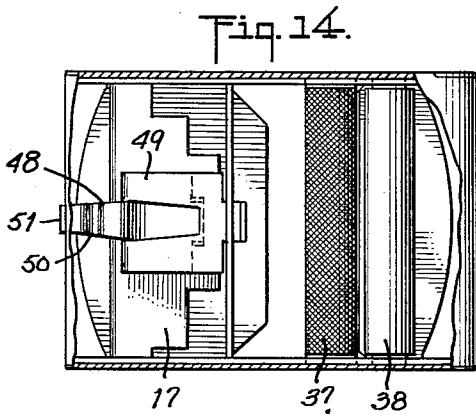
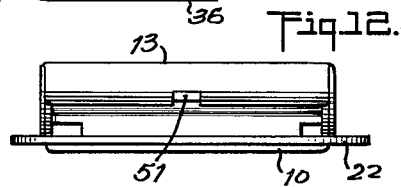
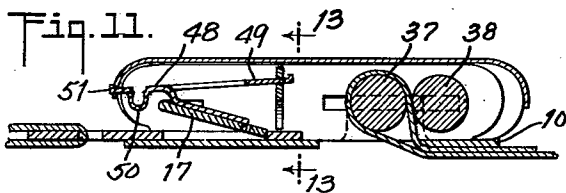
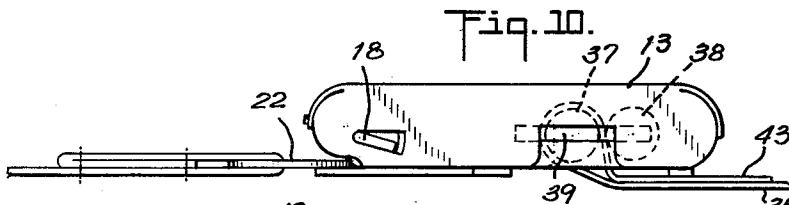
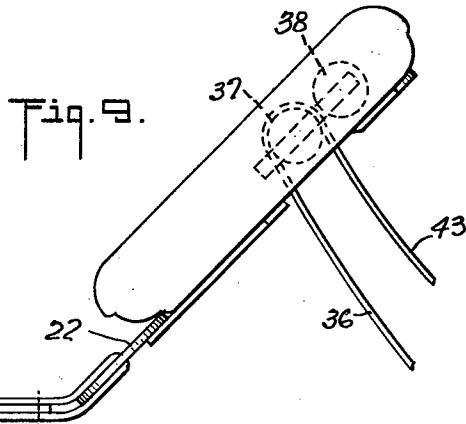
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SEAT BELT BUCKLE

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4 Claims. (Cl. 24-77)

The invention herein disclosed relates to buckles for safety belts, shoulder harness and the like and is a continuation-in-part of the invention in copending application for patent, Serial No. 190,576, filed April 27, 1962, Patent 3,091,010 of May 28, 1963.

Objects of the invention are to provide a simple, practical construction in which the release or adjustment of the belt may be quickly and easily effected by manipulation of a single lever forming the cover of the buckle.

Other objects of the invention are to provide this construction in a small, compact, flattened form, which will lie close to the body of the user and be of light weight and symmetrical, attractive appearance so as not to be in the way or objectionable for any reason.

Accordingly these and other desirable objects have been effected by a novel combination of parts in which the cover is mounted for sliding movement sufficient to effect release of grip on the web and has as well a pivotal swinging movement for effecting release of the end fitting of the web from the body of the buckle.

Other novel features of the invention and further desirable objects accomplished thereby are set forth or will appear in the course of the following specification.

The drawings accompanying and forming part of the specification illustrate present practical embodiments of the invention but structure may be modified and changed as regards the immediate illustration, all within the true intent and scope of the invention as hereinafter defined and claimed.

FIG. 1 in the drawings is a side elevation of one of the buckles in the closed, holding condition, with the web at opposite sides broken away.

FIG. 2 is a top plan view of the same.

FIG. 3 is a plan and broken sectional view of the parts in separated relation.

FIG. 4 is a broken longitudinal sectional view on substantially the plane of line 4-4 of FIG. 2.

FIG. 5 is a side view, showing the cover of the buckle slid to the left to separate the tensioning bar over which the web is looped from the stationary holding bar to leave the web free to be adjusted in both directions.

FIG. 6 is a view looking at the right hand end of FIG. 4 with the webbing at that end of the buckle shown in cross section.

FIG. 7 is a left hand end view of the buckle appearing in FIG. 4.

FIG. 8 is a side elevation showing the cover raised to release the end fitting of the web and showing both runs of the webbing which is looped about the adjustable clamping bar brought out below the base of the buckle.

FIG. 9 is a side view showing how with both runs of webbing below, the buckle may be tipped to release the clamping bar from holding engagement and thus permit adjustment of the web in both directions.

FIG. 10 is a side elevation of this buckle in lowered, holding position.

FIG. 11 is a longitudinal sectional view, showing a modified form of spring for holding the cover in retracted position.

FIG. 12 is a view of the left hand end of the buckle appearing in FIG. 11.

FIG. 13 is a cross sectional view on the plane of line 13-13 of FIG. 11.

FIG. 14 is a broken, part sectional and plan view of the buckle shown in FIG. 11.

The buckle of the present invention resembles that of

the original patent as embodying a base or frame of channel formation having a flat back 10 and upstanding parallel side walls 11, 12, with a release lever or cover having flat back 13 and dependent parallel side walls 14 provided with registering triangular slots 15, 16 in the side walls of the frame and cover respectively for a locking plate 17 having end portions 18, 19 engaged in the triangular slots and a mid-length portion 20 to enter the locking notch 21 in the fitting 22 on the end of belt webbing 23.

FIGS. 1 and 8 show how by raising the cover the lower edges of slots 16 in the cover acting on the end extensions 18, 19 will lift the lock plate 17 to release it from the web end fitting.

The lock bar is yieldingly pressed downwardly toward the back of the frame by spring 24 of V formation confined between the lock bar and a guide bar 25 secured between the side walls of the frame.

In addition, this spring serves to yieldingly hold the cover in the lowered closed position, shown in FIGS. 1 and 4, by means of the flat pivot lugs 18, 19 of such plate bearing on the lower edges of the triangular slots 16 in the side flanges of the cover.

When the cover is lifted, as in FIG. 8, these lower edges of the triangular slots 16 by engagement with lugs 18, 19 will tip the locking plate upwardly to the extent permitted by upper edges of slots 15 in the frame, thus to release the locking plate from the web fitting.

The web 36 forming the opposite end of the belt is shown looped about a tensioning bar 37 and under a snubbing bar or pin 38, both of which are slidably and nonrotatably confined by flat end extensions 39, 40 engaged in slots 41, 42 in the opposite side walls of the frame.

The web 36 which is looped about the tension or clamping bar 37 may be brought out of the frame in several different ways.

In FIG. 1, both runs of this web are shown brought out over the base or bottom 10 of the frame to confine the webbing in close adjustable relation to the holding and clamping bars.

FIGS. 4 and 5 show how the top run 43 of the webbing may be brought out through the frame and the lower run out through the slot 44 in the back of the frame, giving more freedom for adjustment.

FIGS. 8, 9 and 10 show how both runs of webbing 36 may be brought out through slot 44 so as to lie beneath the frame, providing more freedom for adjustment.

FIG. 9 shows how with the webbing 36 brought out through the back of the frame the whole buckle may then be tipped or tilted to let the clamping bar 37 slide out from the snubbing bar 38 to permit the web being freely adjusted either to take up slack or to relieve tension on the belt.

To enable the handle forming cover to be used for relieving the web clamping or holding effect, the cover is slidably mounted on the frame and a lost motion connection is provided between cover and clamp bar.

FIGS. 4 and 5 show this lost motion connection as notches 45 in the lower edges of the side flanges 14 of the cover, which in the closed position of the cover receive the flat extensions 39 of the bar 37, these notches being long enough to stand clear of the extensions 39 in the closed position FIG. 4 and short enough to pick up the end extensions in a slight forward movement of the cover toward the left as in FIG. 5.

To permit this forward clamp releasing movement the triangular slots 16 in the side walls of the cover are shown lengthened toward the wider end of the slots as indicated in FIG. 5.

To retract the cover, that is movement toward the right from the FIG. 5 to the FIG. 4 position, a coiled spring is shown at 46 connected between the cross bar 25 and

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the forward end of the cover at 47 tensioned to hold the cover retracted with the back edges of the notches 45 in the sides of the cover clear of the clamping bar extensions 39.

Instead of providing a separate spring, such as 46, for retracting the slidably mounted cover, this function may be effected, as shown in FIG. 11, by striking out a finger extension 48, of the V spring 49 which holds the locking plate 17 and giving this extension a tensioning loop 50, which with the finger hooked to the cover at 51 will enable this spring to pull the cover into the retracted position.

If desired the slots and notches in the side flanges of the cover may be concealed by cover plates 52 secured over said side flanges, giving the cover a completely smooth finished appearance.

These cover plates may be embossed as indicated at 53 to provide convenient finger holds for lifting and sliding the cover.

The invention effects saving in time both for adjusting belt length or for effecting release of the belt and possibility of confusion is avoided by having just the one member, the buckle cover, for accomplishing both these results. And by this single member the belt may be either lengthened or shortened without unfastening it and, on the other hand, it may be released without affecting the length and remain in the length adjusted condition until it is used again.

The construction is relatively simple and inexpensive for what it accomplishes and presents a neat attractive well-finished appearance.

The forward narrow ends of the slots in the cover flanges provide pivot centers for the outward hinging movements of the cover to release the belt and the elongation of these slots enables sliding movement of the cover necessary to close the lost motion connections and effect release of the clamp bar from gripping engagement with the web.

What is claimed is:

1. A seat belt buckle comprising

a frame of channel form having a back wall and up-standing parallel side walls,

a handle forming cover of channel formation over said frame having reversely extending side flanges,

said side walls of the frame and side flanges of the cover having registering triangular slots,

a locking bar having end lugs extending through said triangular slots and having a locking tongue opposed to said back wall of the frame,

spring means tensioning said locking bar toward said back wall of the frame and tensioning said cover to a retracted position on said frame,

companion web gripping bars on said frame, one of said bars having flat end extensions and the side walls of the frame having slots in which said extensions are slidably engaged,

said side flanges of the cover having notches in the edges of the same positioned to engage over said end extensions and effect the web gripping release of said clamp member when said cover is shifted in opposition to the holding force of said spring means.

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2. The invention according to claim 1 including, a web end fitting insertable over said back wall into position beneath said spring tensioned locking bar having a locking recess disposed for engagement by said locking tongue, the slots in the side flanges of the cover being elongated to enable longitudinal sliding movement of the cover sufficient to effect cooperative engagement of said cover flanges with said end extensions.

3. A seat belt buckle comprising,

a longitudinally extended frame,

a cover over said frame,

a pivotal connection between one end of said cover and one end of the frame enabling the opposite end of the cover to be swung away from the frame,

a web end fitting insertable in said first mentioned end of the frame beneath said cover,

a releasable detent for securing said fitting in the frame, a connection from said cover to said detent for releasing said detent from holding engagement with said fitting by said pivotal movement of the cover away from the frame,

a web gripping clamp at the opposite end of the frame, including a web clamping member shiftable longitudinally of the frame to release the web at said end of the frame,

a longitudinally extended lost motion connection from the cover to said web clamping member arranged to be closed to release the web clamping member by longitudinal shifting movement of the cover in one direction,

spring means normally yieldingly holding the cover shifted in the opposite direction with the lost motion connection in open ineffective relation and the web clamping member in gripping engagement with the web,

said lost motion connection becoming disconnected upon said pivotal movement of the cover whereby said web clamp will not be affected by pivotal movement of the cover to release the detent, and

said pivotal connection being longitudinally extended to permit the longitudinal movement of the cover necessary to release the web clamp without effecting the release of the detent.

4. The invention according to claim 3 in which said web clamping member has projections extended at opposite sides of the frame and in which said cover has side flanges with notches therein engageable with said projections with said parts constituting said lost motion connection.

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