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SEAT BELT BUCKLE

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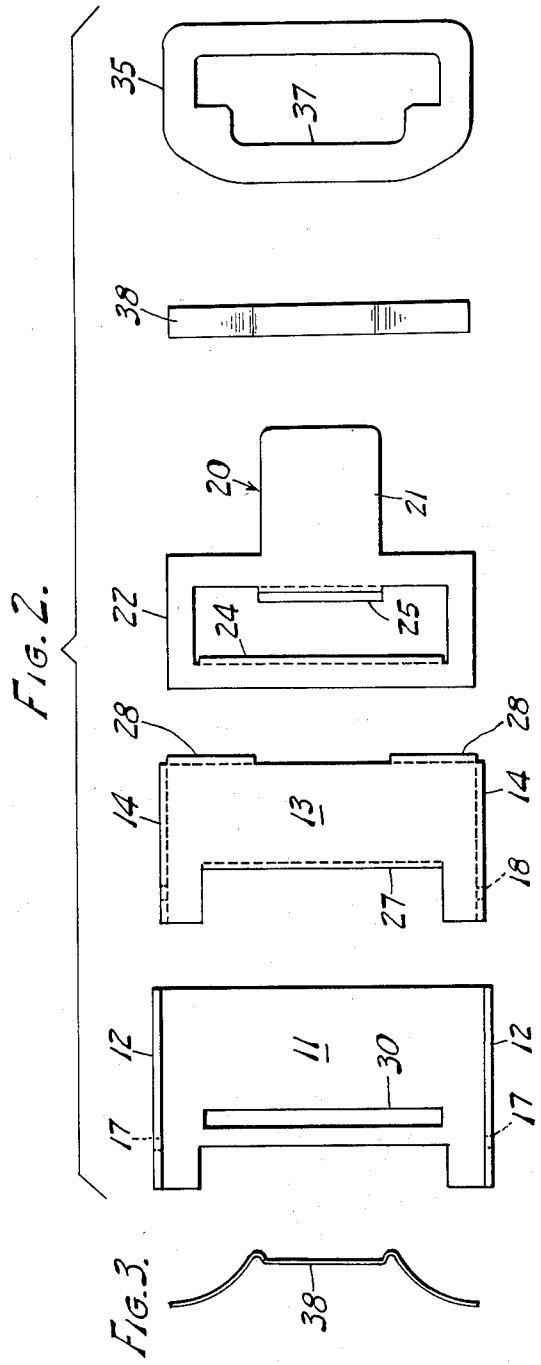


FIG. 2.

FIG. 3.

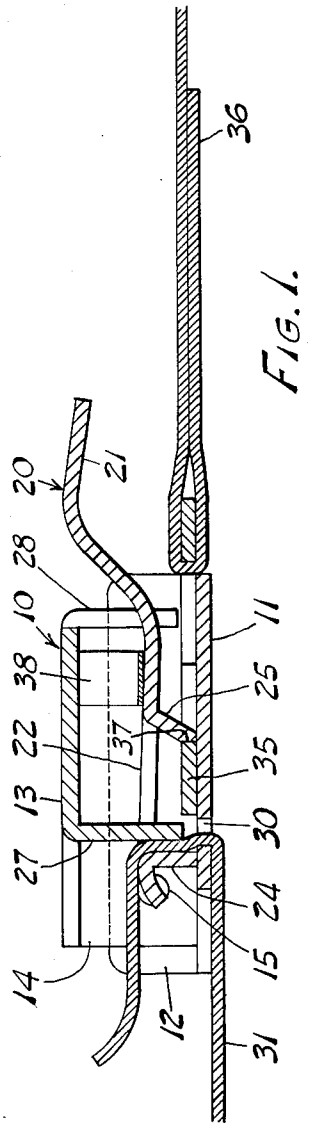


FIG. 1.

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SEAT BELT BUCKLE

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This invention relates generally to buckles for belts and the invention has reference more particularly to a novel safety belt buckle such as is commonly used in connection with the retention of passengers in their seats in vehicles of various kinds.

In convention vehicle safety belt constructions one belt end is adjustably threaded through the buckle and the other belt end has a permanent end member, usually of metal, which is removably engaged in the buckle to secure the same about a passenger's torso. The buckle of the present invention is of this general type. In belts of this general type the adjustable end of the belt is loose and in condition for threading adjustment with respect to the buckle when the buckle is released and adjustment is fixed and secured when the belt is in use and tension is applied.

The buckle of the present invention is extremely simple in construction and operation and is nevertheless certain and foolproof. The buckle consists entirely of simple stampings which renders the same low in cost and the construction is further such that no close tolerances are required. Most buckles of this type in the prior art involve rollers or similar parts which must be fabricated by machine tool operations, such as on a screw machine or automatic lathe. Such parts are not only relatively costly to produce but inherently involve relatively close tolerances in the related parts and in the final assemblage of parts.

In the buckle of the present invention a single stamped part comprises the locking and release lever and, upon the application of tension to the belt serves to grip the adjustable end of the belt securely in adjusted position with respect to the buckle and locks the other end of the belt in securely connected relation with respect to the buckle. All stresses are borne by stampings which are generously proportioned to safely resist the forces which may be applied thereto, particularly in case of the emergencies for which seat belts are employed.

While a single specific embodiment of the principles of the present invention is illustrated in the accompanying drawing and described in detail in the following specification, it is to be understood that such embodiment is by way of example only and that various mechanical modifications may be made without departing from the spirit of the invention, the scope of which is limited only as defined in the appended claims.

In the drawing:

FIG. 1 is a central longitudinal cross sectional view through one form of the safety belt buckle of the present invention;

FIG. 2 is a disassembled top plan view of the parts making up the structure of the buckle shown in FIG. 1; and

FIG. 3 is an elevational view of a leaf spring component of the parts shown in FIG. 2.

In the drawing, like characters of reference denote like parts and the numeral 10 designates generally the general housing or casing of the buckle, the same comprising a lower channel member 11 with upstanding side flanges 12 and an upper channel member 14 with depending side flanges 14. The flanges 14 fit between the flanges 12 and the parts are permanently attached by short rivets 15 which pass through openings 17 and 18 in the flanges 12 and 14 which are shown in FIG. 2. Thus the housing or casing 10 is of generally rectangular tubular formation.

A locking and release member designated generally by the numeral 20 is assembled within the casing or housing 10 prior to the riveting of the channel members 11 and 13 to each other. As clearly shown in FIG. 2, the locking and release member 20 is generally T-shaped, the stem portion 21 thereof comprising an operating handle or lever and the cross bar portion 22 thereof being in the form of an open rectangular frame. The transversely extending edges of the opening in the frame part 22 of member 20 are provided with depending flanges 24 and 25, the latter being preferably oblique as shown in FIG. 1 for purposes which will presently appear.

Channel member 13 is provided with a depending flange 27 which passes through the opening in the frame part 22 of member 20 and, at its right hand edge as viewed in FIG. 2, channel member 13 is further provided with a pair of depending flanges 28 which straddle the operating lever portion 21 of member 20. From this it will be noted that locking member 20 may move from left to right as viewed in FIG. 1 within the housing 10 between the limits defined by engagement of flanges 28 with the right hand edge of portion 22, on the one hand, and engagement of flange 24 with flange 27 of channel member 13, on the other hand.

A slot 30 in lower channel member 11 is so located with respect to the flange 27 of channel member 13 that a passage for the end of a belt 31 is provided between the left hand edge of slot 30 and the left hand face of flange 27. It will be noted that movement of the locking and release member 20 to the right as viewed in FIG. 1 moves flange 24 thereof against belt 31 to clamp the same between flange 24 and the flange 27 of channel member 13.

A flat plate member 35 of closed loop formation has a second belt end 36 permanently attached thereto in the usual manner as shown in FIG. 1. The opening in the plate member 35 includes an edge 37 which forms the locking edge thereof. A leaf spring member 38 whose configuration is shown at the left hand side of FIG. 2 is disposed above the locking and release member 20 to urge the latter downwardly as viewed in FIG. 1.

In applying the belt to a user the plate member 35 is inserted in the buckle proper, that is the housing 10, by projecting the plate member into the right hand end of housing 10. The left-hand edge of plate member 35, as viewed in the drawing, cams the oblique flange 25 upwardly so that the plate member 35 passes beneath the same until flange 25 drops into the central opening in the plate member 35 as shown in FIG. 1, for engagement against locking edge 37 thereof.

It will be noted that prior to applying holding tension to the belt assembly the left-hand belt end 31 may be drawn more or less freely through the slot 30 of bottom channel member 11 to adjust the length of the belt to properly fit the torso of the user. However, when proper adjustment is attained and holding tension is present, the pull of plate member 35 against flange 25 of locking and release member 20 pulls the latter to the right as viewed in FIG. 1. Furthermore, the tension of the other belt end 31 under these conditions tends to pull housing 10 to the left as viewed in FIG. 1 by engagement of belt end 31 against the left hand edge of slot 30. This has the effect of pulling flange 27 of housing 10 to the left, so that the flanges 24 and 27 are pulled toward each other by the flanges 24 and 27 are pulled toward each other by the opposed belt ends. Thus the adjusted belt end 31 is securely gripped between flanges 24 and 27 and the greater the tension in the belt the greater is this gripping action.

When the belt is in fully engaged position the parts are

in the position illustrated in FIG. 1. To release the belt the handle portion 21 of locking lever is manually raised against the resistance of spring 38 to raise flange 25 from engagement with the connecting plate member 35 and the latter may be withdrawn from the buckle.

I claim:

1. In a safety seat belt buckle, a casing comprising upper and lower walls and connecting side walls forming a tubular generally rectangular housing, said lower wall having a slot adjacent to one end of said housing for receiving a belt end upwardly therethrough, a flange depending from said upper wall adjacent to said slot, a locking member comprising a pair of spaced parallel bars extending across said tubular housing, one of said bars being disposed at the side of said flange toward said one end of said housing whereby said belt end passes between said flange and said one bar, the other of said bars being disposed toward the other end of said housing and having a flange directed toward said lower wall, a connecting member fixed to a second belt end and having a bar portion at the leading end thereof, said connecting member being adapted to be inserted at said other end of said housing between said other bar and said lower wall whereby the flange of said other bar engages behind said connecting member bar portion to retain said connecting member, whereby tension on said connecting member pulls said locking member to grip said first belt end between said flange of said upper wall and said one bar of said locking member, said locking member having a handle portion projecting from said other end of said housing and liftable to free said connecting member from said locking member.

2. In a safety seat belt buckle, a casing comprising upper and lower walls and connecting side walls forming a tubular generally rectangular housing, said lower wall having a slot adjacent to one end of said housing for receiving a belt end upwardly therethrough, a flange depending from said upper wall adjacent to said slot, a locking member comprising a pair of spaced parallel bars extending across said tubular housing, one of said bars being disposed at the side of said flange toward said one end of said housing whereby said belt end passes between said flange and said one bar, the other of said bars being disposed toward the other end of said housing and having a flange directed toward said lower wall, a connecting member fixed to a second belt end and having a bar portion at the leading end thereof, said connecting member being adapted to be inserted at said other end of said housing between said other bar and said lower wall whereby the flange of said other bar engages behind said connecting member bar portion to retain said connecting member, whereby tension on said connecting member pulls said locking member to grip said first belt end between said flange of said upper wall and said one bar of said locking member, said locking member having a handle portion projecting from said other end of said housing and liftable to free said connecting member from said locking member, and resilient means urging said locking member toward said lower wall for locking engagement with said connecting member.

3. In a safety seat belt buckle, a casing comprising a tubular generally rectangular housing, a slot adjacent to one end of said housing for receiving a belt end upwardly therethrough, flange means adjacent to said slot, a locking member comprising a pair of spaced parallel bars extending across said tubular housing, one of said bars being disposed at the side of said flange toward said one end of said housing whereby said belt end passes between said flange means and said one bar, the other of said bars being disposed toward the other end of said housing from said one bar and having an offset edge portion, a connecting member fixed to a second belt end and having a bar portion at the leading end thereof, said connecting member being adapted to be inserted at said other end of said housing between said other bar and the slotted wall of said housing so that the offset edge portion of said other bar engages behind said connecting member bar portion to retain said connecting member in said buckle, whereby tension on said connecting member pulls said locking mmeber to grip said first belt end between said flange means and said one bar of said locking member, said locking member having a handle portion projecting from said other end of said housing liftable to free said connecting member from said locking member.

4. In a safety seat belt buckle, a casing comprising a tubular generally rectangular housing, a slot adjacent to one end of said housing for receiving a belt end upwardly therethrough, flange means adjacent to said slot, a locking member comprising a pair of spaced parallel bars extending across said tubular housing, one of said bars being disposed at the side of said flange toward said one end of said housing whereby said belt end passes between said flange means and said one bar, the other of said bars being disposed toward the other end of said housing from said one bar and having an offset edge portion, a connecting member fixed to a second belt end and having a bar portion at the leading end thereof, said connecting member being adapted to be inserted at said other end of said housing between said other bar and the slotted wall of said housing so that the offset edge portion of said other bar engages behind said connecting member bar portion to retain said connecting member in said buckle, whereby tension on said connecting member pulls said locking member to grip said first belt end between said flange means and said one bar of said locking member, said locking member having a handle portion projecting from said other end of said housing liftable to free said connecting member from said locking member, and resilient means urging said locking member toward said slotted wall for engagement with said connecting member.

5. In a safety seat belt buckle, a casing comprising upper and lower channel members having their flanges interfitting to form a tubular generally rectangular housing substantially open at its opposite ends, said lower channel member having a slot adjacent to one end of said housing for receiving a belt end upwardly therethrough, a flange depending from said upper channel member adjacent to said slot, a locking member comprising a pair of spaced parallel bars extending across said tubular housing, one of said bars being disposed at the side of said flange toward said one end of said housing whereby said belt end passes between said flange and said one bar, the other of said bars being disposed toward the other end of said housing and having a flange directed toward said lower wall, a connecting member fixed to a second belt end and having a bar portion at the leading end thereof, said connecting member being adapted to be inserted at said other end of said housing between said other bar and said lower channel member so that the flange of said other bar engages behind said connecting member bar portion to retain said connecting member, whereby tension on said connecting member pulls said locking member to grip said first belt end between said flange of said upper channel member and said one bar of said locking member, said locking member having a handle portion projecting from said other end of said housing and liftable to free said connecting member from said locking member.

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