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SAFETY BELT AND BUCKLE CONSTRUCTION

Filed June 1, 1964

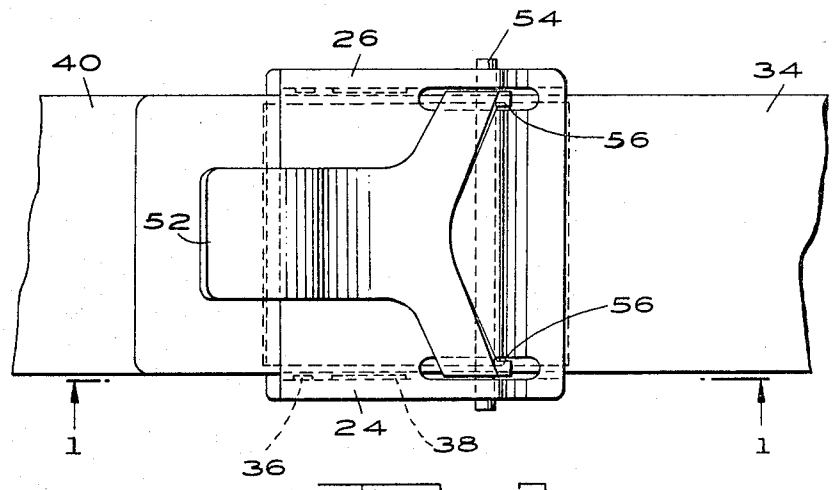


FIG. 2

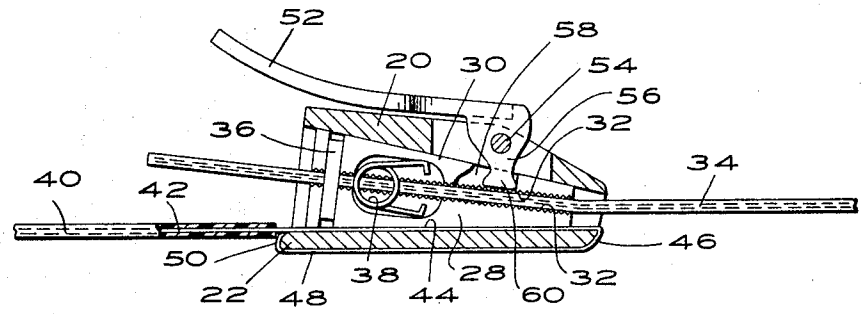


FIG. 1

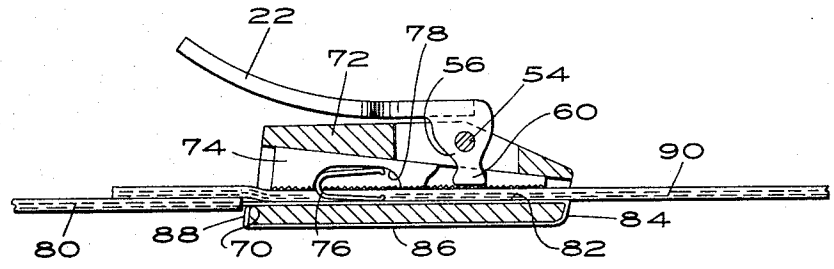


FIG. 3

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SAFETY BELT AND BUCKLE CONSTRUCTION

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1 Claim. (Cl. 24—171)

This invention relates to a belt and buckle combination and more particularly to that type of belt which is used for safety purposes such as for a seat belt.

Reference is made to my co-pending application Serial No. 365,593, filed May 7, 1964 relating to a belt-buckle structure of a nature related to the present disclosure.

It is an object of the present invention to provide a belt and buckle combination which can be particularly used with a belt composed of a flat strip of material of high tensile strength such as tempered steel.

It is an object of the invention to provide a structure wherein it is possible to fasten the one end of the belt in fixed relation to the buckle without the necessity of riveting which tends to weaken the belt construction and which also adds to the cost.

In the present structure, it is an object to provide a fastening means wherein the belt strip may be snubbed around a portion of the belt-buckle in a manner to obtain a securing action which is enhanced by the locking pressure of the belt itself.

Another object of the invention is the provision of a belt and buckle construction which is simple in design and inexpensive in its construction and assembly.

Other objects and features of the invention relating to details of construction and operation will be apparent in the following description and claim.

Drawings accompany the disclosure and the various views thereof may be briefly described as:

FIGURE 1, a sectional view taken on line 1—1 of FIGURE 2 of a belt construction illustrating the invention.

FIGURE 2, a plan view of a belt-buckle construction.

FIGURE 3, a sectional view of a modified construction.

In FIGURE 1, a buckle body is shown having a face or top plate **20** and a rear or back plate **22**. These plates, connected by side walls **24** and **26**, form a passage with angled walls having an included angle of approximately 14°. Operating in this passage between these plates are wedge blocks **28** and **30**, each of which has a serrated surface **32** for engaging the surfaces of a belt strip **34** intended to be adjustably positioned within the buckle body. The wedge plates are joined for simultaneuos action by a slide pin **36**, and a small coiled spring **38** suitably recessed in the side edges of the blocks serves to separate them when they are moved toward the wide end of the passage.

One end of the belt portion **34** may be anchored at the base of a seat and, in this case, another encircling portion **40** serves as the completing portion of the belt; in some instances the portions **34** and **40** may be opposite ends of a single strip. The belt is preferably formed with a flat strip of material **42** which has a high tensile strength such as spring steel. The strip **40** which may be covered by a sleeve or coating throughout its length has one end engaged with the buckle by a snubbed portion which is composed of section **44** passing over the inner surface of the rear plate **22**, a bight portion **46** snubbed around the edge of the rear plate **22**, a return portion which lies flat against the outer surface of the rear plate **22**, and a snap or engaging portion **50** which, in the embodiment in

FIGURE 1, snaps around the other edge of the work plate **22**.

It will be seen that the section **44** is interposed between the block **28** and the rear plate **22**. A locking handle **52** pivoted on a pin **54** passing through the face plate **20** has legs **56** which engage a recess **58** in the wedge plate **30** to facilitate the operation of the locking mechanism. A heel portion **60** moves on the legs to and fro to cam the wedge plates tightly into the recess and also to cam them out to a release position. The wedge plates are held in place by the heel portions **60** to prevent dislodgment from the housing.

With the parts as shown in FIGURE 1, it will be seen that the wedge plates are cammed into locking position in the wedge recess so that there is a considerable surface pressure on both sides of the belt strip **34** and there is also a similar amount of surface pressure on the belt section **44** which is pressed against the inner surface of the rear plate **22**. Thus, once the belt is engaged, the greater the locking force, the greater the pressure to hold the section **44** in place and any pulling action on the belt strip **34** merely tends to increase the holding pressure on all parts.

A modification of the structure is shown in FIGURE 3 wherein a rear plate **70** co-operates with a face plate **72** on the belt construction, the handle operation being the same. In this embodiment, a single wedge block **74** is biased by a small spring **76** operating in an edge recess **78**. The fastening portion of a belt end **80** has a section **82** overlying the inner face of rear plate **70**, a bight portion **84** and a return portion **86** terminating in a locking lip **88**. The other end of a belt strip **90** passes through the belt buckle body over the surface of the belt section **82** and underlying the serrated surface of the wedge block **74**. Thus, in the locking position shown in FIGURE 3, the wedge block **74** exerts pressure over a fairly large amount of the surface of belt strip **90** and also exerts this pressure against the belt section **82** of the fastening portion **80** so that both the fixed and the adjustable ends are subject to the locking pressure when the parts are in locking position.

In the manufacture of the device, the core **42** of the belt can be formed into the shape in which it will ultimately assume in its final position and the material can be heat treated in this shape. It is then a simple matter to open up the loop in the end of the belt strip **40**, for example, to insert the rear plate **22** and snap the lip **50** into position. As previously stated, the main portion of the belt can be an envelope of plastic over the steel core strip, this envelope being either slipped on or coated on the core. A plastic core can also be used providing it has sufficient tensile strength to serve the purpose for which the belt is to be used.

I claim:

A locking buckle for a relatively wide, flat, thin strap formed of metal having a high tensile strength to serve as a passenger vehicle safety belt comprising:

(a) a rigid housing having a wedge-shaped chamber with aligned openings formed by front and rear walls rigidly connected by side walls disposed at an angle to each other, said front wall having an opening extending to said chamber,

(b) a pair of wedges in said chamber slidable therein from a locking to an unlocking position and means joining said wedges for simultaneous sliding movement,

(c) spring means in said housing biasing said wedges to an unlocking position,

(d) positive locking means comprising a lever pivoted on said housing for shifting said wedges in said chamber, said lever having an arm projecting through said opening in the front wall of said housing and into a cam recess in one wedge adjacent said opening to hold said wedges captive in said housing and to forcibly shift said wedges to a locking or an unlocking position,

(e) one end of said strap passing through said housing in a predetermined fixed position between said wedges and a rear wall of said housing, said end being formed around the outer surface of said rear wall to engage the two end edges of said rear wall

and another end of a strap passing through said housing above said first end adapted to be clamped by said wedges in said housing which simultaneously exert a stabilizing pressure on said first end.

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