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F. L. DAVIS

2,826,796

SAFETY SEAT BELT BUCKLE

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Fig. 1

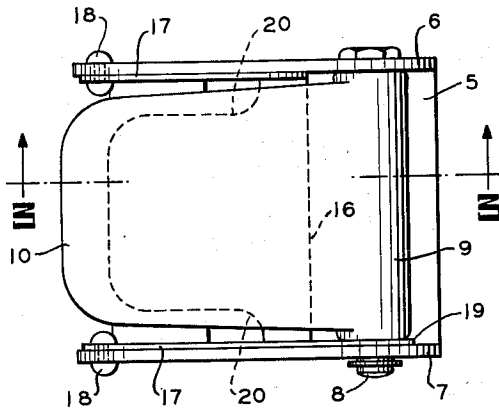


Fig. 2

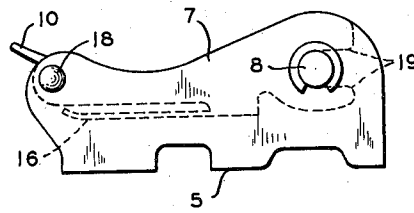


Fig. 3

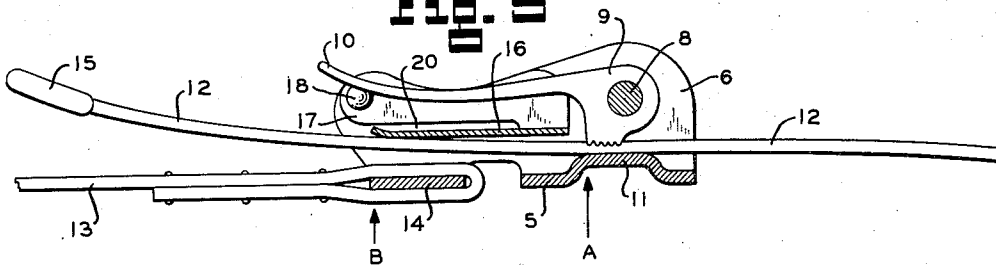
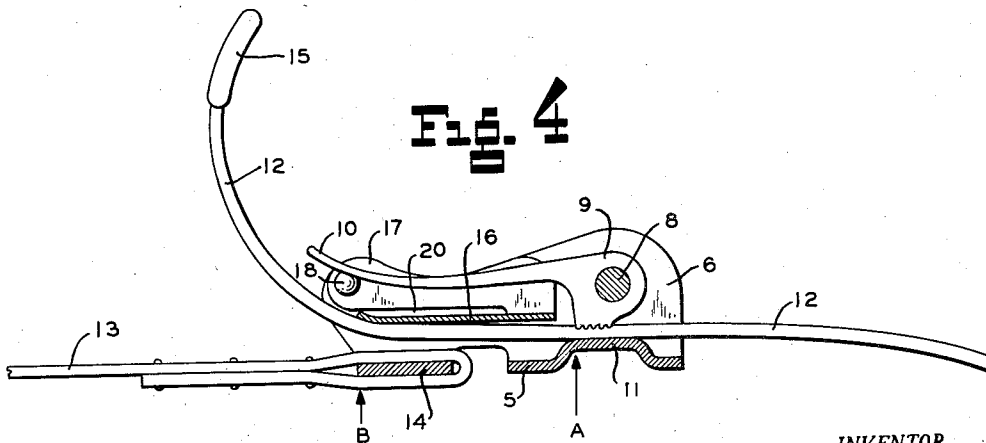


Fig. 4



INVENTOR.
FRANK L. DAVIS

BY

Philip S. Dean,
ATTORNEY

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SAFETY SEAT BELT BUCKLE

Frank L. Davis, College Point, N. Y., assignor to Davis Aircraft Products, Inc., New York, N. Y., a corporation of New York

Application March 1, 1956, Serial No. 568,732

1 Claim. (Cl. 24—170)

The invention disclosed relates to belt buckles of the type covered in copending patent application Serial No. 493,150, filed March 9, 1955, in which the belt webbing is held by a spring closed cam which can be released by lifting a lever handle extension connected with the cam.

The free end of the strap or webbing normally extends out of the buckle beneath this releasing lever.

The present invention is based on the realization that under crash conditions this free length of webbing can act with powerful leverage effect to momentarily lift the cam lever sufficiently to release the webbing and thus nullify the whole effect of the seat belt. Under such conditions the seat belt actually becomes an element of danger, creating a sense of safety not to be relied on in the event of a crash.

The objects of the present invention are to guard against the possibility of accidental release of the belt buckle and to accomplish this with simple, practical structure applicable to buckles presently in use, such as disclosed in the identified patent application.

Further special objects of the invention are to provide this safety factor in a form which will not add to the bulk or weight of the buckle, which will not alter the regular and understood use of the buckle and which in fact will actually aid in the proper use of the buckle, particularly in insuring the proper reeving or engagement of the webbing with the buckle.

The foregoing and other desirable objects are attained by novel features of construction, combinations and relations of parts as hereinafter described and claimed and illustrated by way of example in the drawing accompanying and forming part of this specification.

While the structure shown may be considered as exemplifying the presently preferred form of construction, it will be apparent from the description and claim following that structure may be modified and changed as regards the immediate illustration.

Fig. 1 in the drawing is a plan view of the buckle with the anti-release safety feature incorporated;

Fig. 2 is a side elevation of the buckle;

Fig. 3 is a longitudinal sectional view of the buckle as on substantially the plane of line 3—3 of Fig. 1 but showing the webbing connected therewith and the cam in closed position;

Fig. 4 is a view similar to Fig. 3 but showing the effect under crash conditions of the free end portion of the webbing snapping outward but confined by the overstanding guard against cam-freeing contact with the end of the lever.

The buckle shown is like that disclosed in copending patent application Serial No. 493,150, consisting of a sheet metal frame made up of a base portion 5 having upstanding flanges 6, 7 carrying stud 8 on which the spring closed cam 9 is pivoted, said cam having a hand lever 10 extending toward or beyond the opposite end of the buckle and by which the cam may be lifted away from the companion pad portion 11 of the buckle to release it from holding engagement with the strap or webbing 12.

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The latter may be considered the free or adjustable portion of the belt, the other section 13 of webbing being looped or otherwise non-adjustably secured to the buckle at 14 and being anchored to some fixed portion of the vehicle or other structure on which the belt is used.

Fig. 3 shows how under normal riding conditions the free end of the adjustable length of webbing, which is usually made heavier by a thickened or reinforced handle or terminal portion 15, will ordinarily extend practically straight out of the buckle and lie close over the fixed length of webbing 13.

Fig. 4 shows how with a sudden stop resulting from crash or other extreme conditions, the free, weighted end of the webbing will fly outward or forward, operating as a lever powerful enough in many cases to momentarily lift the cam lever.

The present invention eliminates this danger by provision of a guard overstanding the free portion of the webbing within the buckle and forming a barrier preventing such free portion from engaging the cam lever.

Specifically this guard is shown as a light sheet metal spring plate 16 interposed between the base of the buckle and the lever, in front of the cam 9 and companion pad 11, and shown as supported in that relation by side flanges 17 at the edges of the plate closely engaging the flanges 6, 7 and riveted thereto at 18.

To overcome any rocking tendency and to positively secure the guard plate in position substantially parallel to the base wall 5, one of the flanges 17, the lower one in Fig. 1, is shown as having a forked extension 19 engaged over the pivot stud 8 between flange 17 and the adjoining end of cam 9.

The ends of the guard plate 16 and adjoining portions of the supporting flanges 17 are shown as cut away at 20, Figs. 1 and 3, to lighten the guard structure and to give these parts a yielding spring characteristic, enabling the guard to be yieldingly gripped between the side flanges of the buckle and permitting the plate itself to yield to a slight extent to cushion the snapping action of the webbing.

In addition to preventing the webbing from releasing the cam, the guard, overstanding the free length of webbing, actually shortens the length of leverage that the webbing could apply to the cam lever. Without this guard the free portion of the webbing would have a tendency to pivot from a point A, Figs. 3 and 4, where it is to be held by the cam. The overlying guard shortens this possible leverage to the pivotal point B, thus reducing the inertia effect as well as actually preventing any dangerous exercise of that effect.

Additionally, also, the overstanding guard serves as a guide for directing the free end of the webbing through the buckle, enabling anyone unfamiliar with the buckle to readily enter and feed the webbing through the buckle. The guard does not add in effect to the weight and does not encumber or add bulk to the buckle. The cost is low but all these advantages are much outweighed by the non-accidental release safety factor provided by the invention. Also, the guard is below and out of the range of action of the cam lever and so does not limit or restrict the operation of the web holding cam.

The guard further prevents accidental release of the cam by pulling outwardly on the free end of the webbing.

Extending as it does practically from the cam out to the end of the buckle, the guard plate assures that the webbing entered in the end of the buckle will pass properly beneath the cam and out the far end of the buckle. This plate, while normally beneath the range of web clamping movement of the lever so as not to limit or restrict the web clamping and holding action of the cam, by reason of its springy construction may yield inwardly

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if the lever be hammered or forcibly pressed inwardly toward the back or base of the buckle.

The spring guard plate can be manufactured at low cost and can be inexpensively installed in seat buckles now in use, thus to convert them to anti-crash-releasing safety seat belt holding buckles.

What is claimed is:

Anti-crash-releasing safety seat belt buckle comprising the combination of buckle frame and cam pivoted in said frame in position to grip and hold a free length of webbing extended through the buckle, said cam having a releasing lever extending longitudinally of the frame over the webbing gripped by the cam and a guard mounted in the frame in position over the webbing gripped by the cam and disposed beneath the end of said releasing lever in position to prevent the free end portion of the webbing

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extending beyond the lever from lifting the lever in the cam releasing direction of movement, said guard being in the form of a thin substantially flat plate extending substantially from the cam to the far end of the buckle in substantial parallelism with the webbing held by the cam and held in such relation by engagement with the pivot mounting of the cam at one end and by engagement with the buckle frame of the opposite end.

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