

March 16, 1971

P. CIBIE

3,570,073

SAFETY BELT BUCKLE

Filed March 4, 1969

2 Sheets-Sheet 1

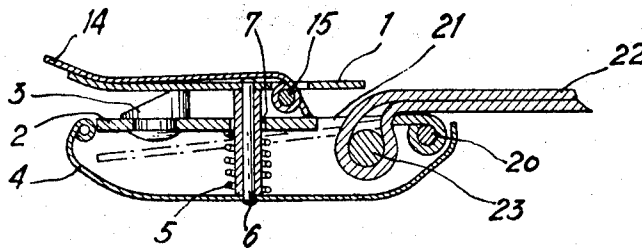


Fig. 1

Fig. 2

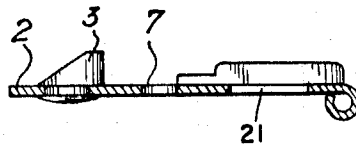


Fig. 3

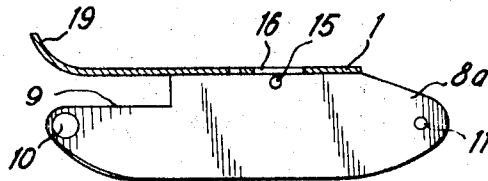


Fig. 4

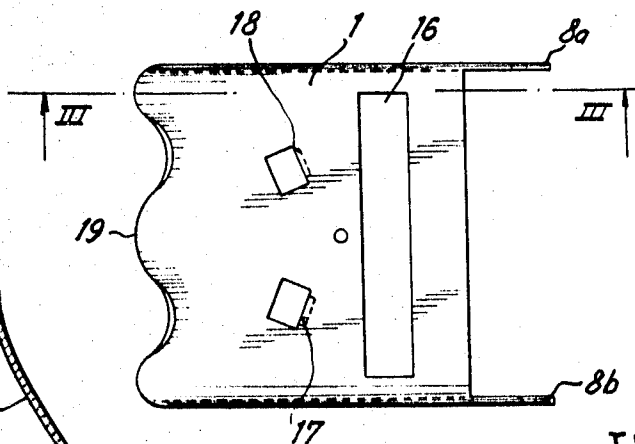
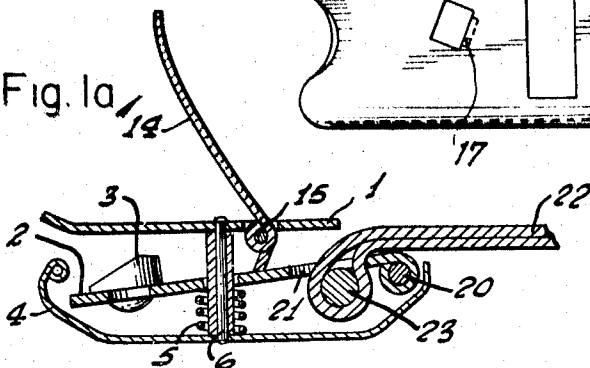


Fig. 1a



INVENTOR:
PIERRE CIBIE

By

Breitenfeld & Lerner

ATTORNEYS

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Fig. 5

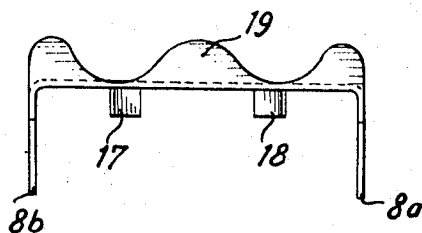


Fig. 6



Fig. 7

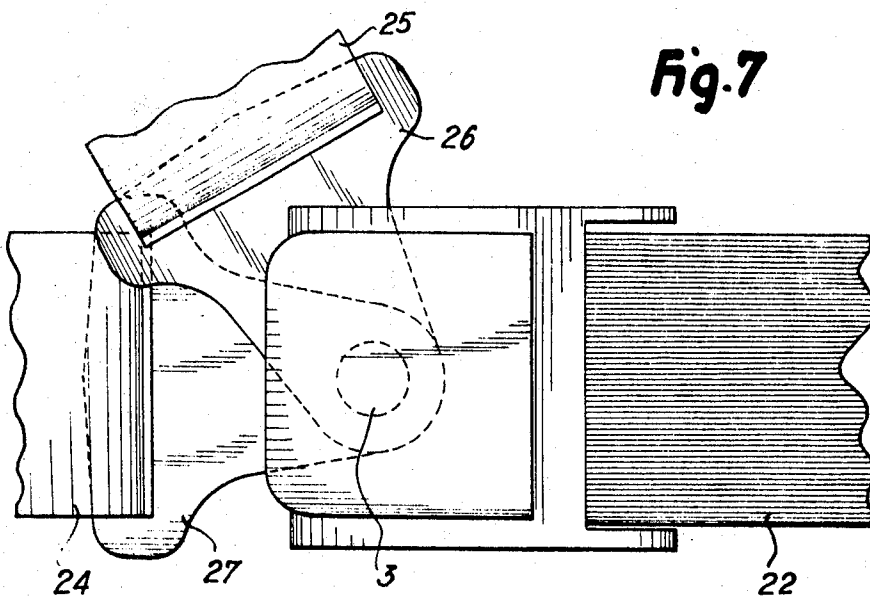
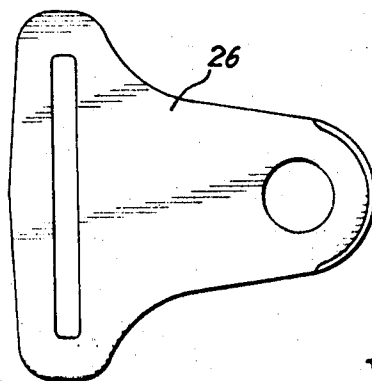


Fig. 8



INVENTOR:

PIERRE CIBIE

By

Breitenfeld & Lemme

ATTORNEYS

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SAFETY BELT BUCKLE

Pierre Cibie, Paris, France, assignor to Projecteurs Cibie and E.F.A. Etudes et Fabrications Aeronautiques
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6 Claims

ABSTRACT OF THE DISCLOSURE

A safety belt buckle comprising a stationary jaw and a movable jaw with a formation serving to permit connection of a strap, a spring being provided between the jaws to hold them closed and a jaw opening lever being mounted on the movable jaw. The stationary jaw forms part of a casing which encloses and mounts the movable jaw and which has a base wall between which and the movable jaw the stationary jaw is mounted and the spring being disposed between the movable jaw and the base wall.

This invention relates to buckles for safety belts as used in, for example, motor vehicles.

There is already known a buckle for a safety belt and which comprises two plates forming jaws, one being "movable" and the other "stationary" the movable plate having on its face adjacent the stationary plate a projecting cylindrical wedge serving as attachment means for at least one lock element or anchoring part associated with the strap of the belt, spring means constantly tending to close the plate jaws, and a lever supported on the movable plate for use in opening the plate jaws against the spring action.

The present invention relates to a buckle of this kind which is improved in that the stationary plate is part of a casing enclosing and pivotally mounting the movable plate, and the casing comprises at least one base wall located on the opposite side of the movable plate from the stationary plate, and the spring means comprises at least one spring supported between the movable plate and the base wall.

Preferably, the stationary plate extends laterally in the form of two bent wings in order to form a U-shape, the base plate being fixed on these two wings in such a manner as to close the U, the assembly of this plate and of the base plate thus constituting the casing from the spring and the movable plate. This arrangement is very advantageous since the user is protected from injury from all the parts constituting the buckle.

Preferably also, the spring is guided by a rod fixed at one end to the base wall and at the other end to the stationary plate, this rod freely passing through an opening provided in the movable plate.

The movable plate is preferably pivotally mounted, at its end opposite to that which supports the wedge, at a fixed pivot between the two wings of the casing.

The operating lever may also be pivotally mounted at a pivot supported by the two wings of the casing, this pivot being provided between the two plates.

The movable plate preferably has an opening in the region of its pivot axis in order to allow for passage of a strap of the belt, the latter being secured about a shaft supported by the two wings of the casing and located between the movable plate and the base wall.

An embodiment of the present invention will now be described, by way of example, with reference to the accompanying drawings, in which:

FIG. 1 is a longitudinal section of the buckle according to the invention;

FIG. 2 is a longitudinal section of the movable plate of the buckle;

FIG. 3 is a longitudinal section of the stationary plate taken along line 3—3 of FIG. 4;

FIG. 4 is a plan view corresponding to FIG. 3;

FIG. 5 is an end view from the left of the plate of FIG. 3;

FIG. 6 is a longitudinal section of the base wall;

FIG. 7 is a plan view of the buckle according to the invention provided with two straps; and

FIG. 8 is a front view of a lock element or anchoring part of the buckle.

Referring to FIG. 1, there is shown at 1 the stationary plate and at 2 the movable plate of the buckle of the safety belt, these two plates constituting jaws.

The movable plate 2 has on its face adjacent the stationary plate 1 a projecting, cylindrical wedge 3.

In the buckle according to the invention, the stationary plate 1 is part of a casing or cover enclosing the movable plate 2 and comprising a base wall 4 located on the other side of the movable plate 2 in relation to the stationary plate 1.

A spring 5 is arranged between the movable plate 2 and the base wall 4 and is such that it tends to urge the movable plate 2 towards the stationary plate 1, thus closing the jaws.

This spring 5 is guided by a rod 6 fixed at one end to the stationary plate 1 and at its other end to the base wall 4, an opening 7 being provided in the movable plate 2 in order to allow for free passage of the rod 6 when the movable plate 2 pivots.

The stationary plate 1 is extended on two parallel sides by downwardly extending wings 8a, 8b. This plate 1 thus has an inverted U-shape in cross section (see FIG. 5).

A notch 9 (FIG. 3) is provided in each wing 8a, 8b in order to allow for easy passage of the anchoring parts, as will be seen later. The U-configuration of the stationary plate 1 permits easy mounting of the base wall 4. This wall 4 is, in fact, mounted on two shafts 10 and 11, co-operating respectively with an inturned portion 12 of the wall 4 and the lugs 13 (FIG. 6) provided on the wall 4. The shafts 10 and 11 also serve as means for maintaining the separation of the two wings 8a, 8b.

The buckle is provided with an operating lever 14 pivotally mounted on the stationary plate 1 and supported on the movable plate 2 in order to effect a separation of the latter from the stationary plate 1 (the position shown chain-dotted in FIG. 1). It will be noted that the lever 14 may have substantially the same shape as the stationary plate 1. Due to the shape of the stationary plate 1, the lever 14 is simply mounted on a shaft 15 supported by the two wings 8a, 8b. An opening 16 is provided in the plate 1 in order to allow for passage of the lever 14. The stationary plate 1 also has two stops 17, 18 which limit the penetration of lock elements connected to the straps of the belt and simultaneously bring about their positioning (FIG. 5). The end of the plate 1 adjacent the notches 9 terminates in rounded parts 19 intended to facilitate the positioning of these lock elements.

The end of the movable plate 2, opposite that which carries the wedge 3, is pivotally mounted on a shaft 20 supported by the two wings 8a, 8b. An opening 21 is provided in the plate 2 in the region of the shaft 20 in order to allow for passage of a strap 22 of the belt. This strap 22 passes around a shaft 23 mounted transversely between the two wings 8a, 8b.

The strap 22 corresponds to the stationary webbing which connects the buckle to an attachment point fixed to the bodywork of a vehicle or to the fuselage of an aeroplane. The regulation of the length of this strap is very easy: after releasing the buckle the user need only pull on the buckle to cause the latter to slide on the strap 22 and come to the desired position. The manner in which

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this adjustment operates cannot be seen by the user since the shaft 23 is located inside the buckle.

FIG. 7 shows how the lap strap 24 and shoulder strap 25 of the belt can be attached on the same wedge or stud 3 by the intermediary of lock elements 26, 27. Thus the lap and shoulder straps of the belt remain completely independent. In addition, as the stud 3 is cylindrical and the attachment apertures of the lock elements 26, 27 are circular, the lock elements 26, 27 may pivot freely about this stud 3. This results in the straps 24, 25 automatically assuming the ideal position corresponding to the posture of the user. The notch 9 in the cover 1 also allows this pivoting.

The fastening of the buckle, i.e. the engagement of the lock elements 26 and/or 27 on the pivot 3 is effected by pushing these lock elements on the stud 3 which moves until it can penetrate the corresponding apertures of these lock elements.

It is also possible to use the lever 14 for temporarily retracting the stud.

The opening of the buckle is effected by means of the operating lever 14 which retracts the stud 3, which releases the lock elements. It will be noted that the lever 14 is provided in such a manner that it remains in the open position after opening, which reduces the risks of incorrect buckling.

It is possible that the base wall 4 does not entirely close the base of the casing.

The embodiments of the invention in which an exclusive property or privilege is claimed, are defined as follows:

1. A buckle for a safety belt comprising a stationary plate and a movable plate forming a jaw, a member projecting from said movable plate toward said stationary plate, said member serving as an attachment means for cooperation with a lock element inserted into the jaw, said stationary plate forming part of a casing enclosing said movable plate, said casing including a wing projecting from each side of said stationary plate, said wings together with said stationary plate forming a casing part having a U-shaped cross-section, and a base wall secured to said U-shaped casing part so as to close the U, a rod extending between and fixed to said base wall and stationary plate, an opening in said movable plate through

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which said rod passes, a compression spring surrounding said rod and located between said base wall and said movable plate for urging the latter toward said stationary plate, and a lever movably supported by said U-shaped casing part for moving said movable plate away from said stationary plate against the force of said spring.

2. A buckle as defined in claim 1 including a shaft extending between said wings, and wherein said movable plate is pivotally mounted at one of its ends on said shaft.

3. A buckle as defined in claim 1 including a shaft extending between said wings, and a belt mounted on said shaft.

4. A buckle as defined in claim 3 wherein said shaft is located between said movable plate and said base wall, and including an opening in said movable plate through which said belt passes.

5. A buckle as defined in claim 1 including a shaft extending between said wings and located between said stationary and movable plates, said lever being pivotally supported on said shaft.

6. A buckle as defined in claim 1 including a notch in each of said wings, each said notch extending to one side edge of its respective wing, whereby a locking element within the jaw may pivot in a plane substantially parallel to the plane of said stationary plate.

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BERNARD A. GELAK, Primary Examiner

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