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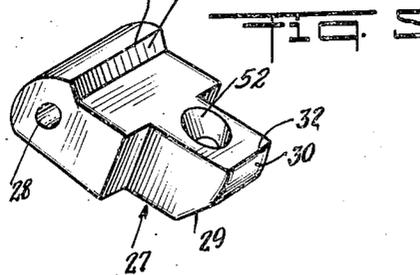
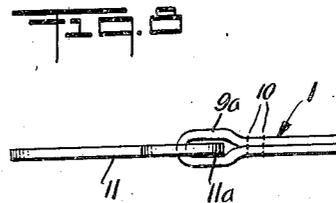
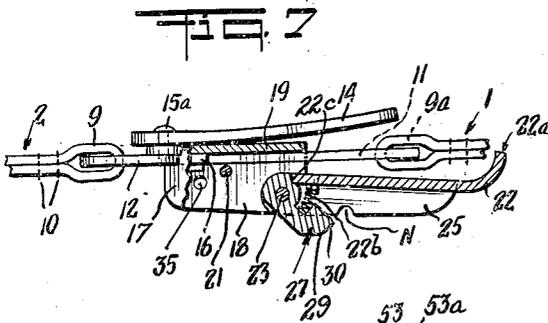
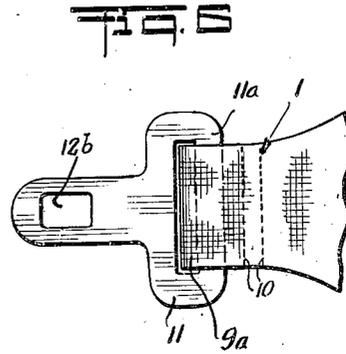
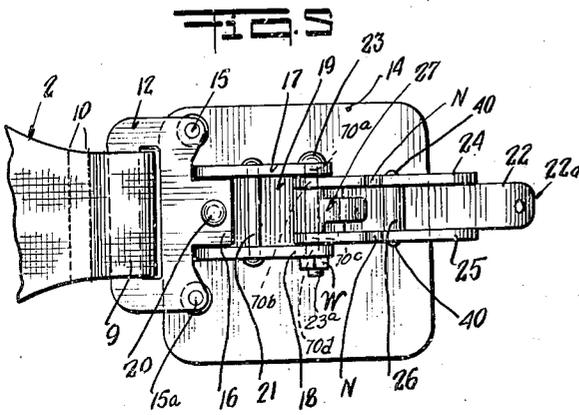
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2,458,810

AVIATOR'S BELT

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2 Sheets-Sheet 2



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AVIATOR'S BELT

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7 Claims. (Cl. 24-179)

1

Our invention relates particularly to a new and improved aviator's belt, although the scope of the invention is not limited to any specific purpose.

The main objects of our invention are to provide the band-members of the belt with improved releasable connecting means; to provide a buckle on one said band-member which can be opened and closed and which can engage a locking tongue on the other band-member when said buckle is either opened or closed; so that said band-members can be engaged or disengaged by using one hand of the user; to provide a buckle which can be quickly and easily opened in order to release said locking tongue; to provide the buckle with a catch for said locking tongue, said catch being movable relative to the operating arm of the buckle; to provide a safety buckle which cannot be opened by an unlocking pull; and to provide a device of simple and sturdy construction, whose parts need not be made with great precision.

Other important objects of our invention will be stated in the annexed description and drawings, which illustrate a preferred embodiment thereof.

Fig. 1 is an end or top elevation of the improved device, parts of the representations of the respective band-members being omitted.

Fig. 2 is a front elevation, on an enlarged scale, of the buckle and the respective adjacent parts of the band-members. The pivoted arms of the buckle is shown in the closed or operative position.

Fig. 3 is a section, partially in top plan, on the line 3-3 of Fig. 2. The full-line position of the pivoted arm of the buckle is the closed or operative position of the pivoted arm and of the buckle. The broken-line position of said pivoted arm shows the direction in which said pivoted arm is turned in order to release the locking tongue.

Fig. 4 is a section on the line 4-4 of Fig. 3, as rotated ninety degrees clockwise.

Fig. 5 is a front elevation, which shows the pivoted arm of the buckle turned 180° from the operative position of said arm, which is shown in full lines in Fig. 3.

Fig. 6 is a front elevation, showing the locking tongue and a part of the respective band-member.

Fig. 7 is a detail top plan view, partially in horizontal section, in which the representation of a part of the top wall of the channel-shaped body has been omitted, showing the locking tongue in operative position, and showing the

2

locking bar turned counterclockwise 180° from its locking position which is shown in full lines in Fig. 3.

Fig. 8 is a top or end elevation of Fig. 6.

Fig. 9 is a perspective view of the catch of the buckle, which engages the locking tongue.

The device comprises band-members 1, 1a, 2 and 2a, which are made of any suitable flexible material.

The band-members 1a and 2a have respective loops 4a and 60a, 4 and 60, at their respective ends.

The loop of each band-member 1, 1a, 2 and 2a, is formed in the usual manner, by inturning an end-portion of the material of the respective band-member, and sewing said inturned end-portion to the body of the respective band-member.

Stitches 5 are used in forming said loops 4a and 60a, 4 and 60.

The construction of each inner rigid holding-tongue 6 is generally similar to the construction of the locking-tongue 11, which is shown in Figs. 6 and 7. Each said inner holding-tongue 6 has a perforation, similar to the perforation 12b of locking-tongue 11. The perforation of each holding-tongue 6 may be cylindrical instead of the rectangular shape of the perforation 12b. Each said inner rigid holding-tongue 6 has an end-bar which is similar to the end-bar 11a of locking-tongue 11. The rigid cylindrical shank of a headed stud 8 is located in the perforation of each inner holding-tongue 6. Said studs 8 are fixed to a fixed support 7. The heads of said studs 8 are sufficiently large to prevent the inner holding-tongues 6 from slipping off said studs 8.

The respective end-bars of the holding-tongues 6 are respectively turnably retained in the respective loops 4 and 4a.

The device is provided with adjusting buckles 3, of any suitable construction. These adjusting buckles 3 serve to adjust the lengths of band-members 1 and 2.

Since this invention is not directed to any specific type of adjusting buckle, and since such adjusting buckles can be omitted without departing from the invention, such adjusting buckles 3 are not described in detail herein.

Each said adjusting buckle 3 is turnably held in the respective loop 60 or 60a.

The end-bar 11a of locking-tongue 11 is turnably held in loop 9a of band-member 1. For convenience, this band-member 1 is designated as the interlocked band-member, and the band-member

2 is designated as the locking band-member. The inwardly turned end-portion of the material of the interlocked band-member 1 is sewed to its body by means of stitches 10, which correspond to stitches 5. Loop 9 is similarly formed in the free end of locking band-member 2.

The rigid abutment plate 12 is turnably held in loop 9. Said rigid abutment plate 12 is rigidly fixed to rear plate 14, by rivets 15 and 15a. Rear plate 14 is made of resilient leather, or other material, rigid or non-rigid.

Abutment plate 12 has a reduced extension 16, which fits between the interior faces of the parallel plates 17 and 18 of a channel-shaped body. Said channel-shaped body has a base 19. Said channel-shaped body is the body of the buckle.

Extension 16 abuts the front face of base 19. Extensions 16 and base 19 are rigidly fixed to each other, by means of rivet 20.

A rigid stop-pin 21 is fixed to the top and bottom walls 17 and 18. For convenience, the device is described in the position in which the parallel walls 17 and 18 are horizontal and the base 19 is vertical.

As shown in Fig. 7, said stop-pin 21 is spaced forwardly from said channel-base 19. The drawings are substantially to scale, and reference is made thereto for further details.

Said walls 17 and 18 are provided with aligned perforations 35 and 35a.

A locking bar 22 is provided at a portion of its length with a top wall 24 and a bottom wall 25. The free end of said bar 22 has an outwardly turned end-portion 22a. The shank of a pivot pin 23, which has a head at one end thereof, is located in aligned perforations 70a, 70b, 70c and 70d respectively of the walls 17, 24, 25 and 18. The bottom end or free end of pivot pin 23 is threaded at 23a, and said threaded end can be provided with a conventional washer or nut W, in order to retain said pivot pin 23 in position. Pivot pin 23 can turn in unison with bar 22, or bar 22 can turn on pivot pin 23.

The shank of pivot pin 23 is also located in the bore 28 of a catch 27. Said catch 27 is turnable relative to locking bar 22.

Catch 27 is provided with a recess 52, respective planar faces 29 and 53a and a slightly convex end face 30. Said catch 27 has respective edges 32 and 53.

A pin 20a is fixed to locking car 22. Said pin 20a is located in one end of a helical compression spring 22b. The other end of spring 22b is located in recess 52 of catch 27.

Spring 22b biases the catch 27 to turn inwardly and from bar 22, until the planar face or wall 53a of catch 27 abuts the respective adjacent end-wall of locking bar 22. This position of catch 27 is shown in Fig. 7.

Said planar face 53a and the corresponding end-face 22c of bar 22, constitute stop-means or stop-walls for limiting the turning movement of catch 27 relative to bar 22, under the force of the biasing spring 22b. In said abutting position, which is shown in Fig. 7, the effective angle between bar 22 and catch 27 is an acute angle.

A tube 26, which has reduced end-portions, is located between and fixed to the parallel side walls or lateral walls 24 and 25 of locking bar 22. Balls 40 and 40a are slidably and turnably retained in the reduced end-portions of tube 26. A biasing compression spring 33 yieldingly holds said balls 40 and 40a in the respective positions shown in Fig. 4, in which said respective balls 40 and 40a project partially from the respective

ends of tube 26. Said balls 40 and 40a can be located partially in the bores 35 and 35a of the walls 17 and 18.

The distance between the inner faces of walls 17 and 18, is less than the distance between the outer tips of balls 40 and 40a, when they are in the outermost positions in which said balls 40 and 40a are yieldingly held by spring 33, when locking bar 22 is in the position shown in Fig. 5.

When the locking bar 22 is moved to the operative position which is shown in full lines in Fig. 3, said balls 40 and 40a are forced inwardly from their respective outermost positions, by contact with said walls 17 and 18, until said balls 40 and 40a are aligned with perforations 35 and 35a. The spring 33 then snaps the balls 40 and 40a into their holding positions which are shown in Fig. 4, in which said balls 40 and 40a partially enter the perforations 35 and 35a of the walls 17 and 18. The balls 40 and 40a then yieldingly hold the bar 22 in its operative position.

In such operative position, the pin 21 enters the notches N which are provided in the horizontal walls 24 and 25 of bar 22. Pin 21 then abuts the walls of notches N, so that pin 21 limits the inward turning movement of bar 22. In its operative position, the free edges of walls 24 and 25 are spaced from channel-base 19.

Before turning the locking bar 22 to its operative position, the locking-tongue 11 may be inserted longitudinally between the walls 17 and 18, until the free end of locking-tongue 11 abuts the free edge of extension 16. This operative position of locking-tongue 11 is shown in Fig. 7. In said position, tongue 11 abuts channel-base 19. Said tongue 11 fits closely between walls 17 and 18.

While the bar 22 is turned inwardly until balls 40 and 40a enter perforations 35 and 35a, catch 27 is turned in unison with bar 22, towards base 19, with little or no relative turning movement between catch 27 and bar 22.

During said inward turning movement of catch 27 to operative position, it clears the stop-pin 21. In its operative position, the catch 27 enters the perforation 12b of tongue 11, thus locking the tongue 11 to channel-base 19, although there may be some relative movement between tongue 11 and channel-base 19, when tongue 11 is in locked position. In its operative position, the planar face 29 abuts or is close to, the channel-base 19.

Bar 22 and catch 27 can be turned to their respective operative positions before pushing tongue 11 into its operative position. When tongue 11 is then pushed into operative position, it turns catch 27 towards bar 22, while bar 22 is fixed in operative position by the balls 40 and 40a. When the tongue 11 has been sufficiently inserted between walls 17 and 18, catch 27 is snapped back into operative position by spring 22b.

By turning bar 22 outwardly through a small angle, until balls 40 and 40a clear the walls 17 and 18, the locking tongue 11 is wholly released. However, tongue 11 is securely held in position, while balls 40 and 40a engage the walls of perforations 35 and 35a.

When bar 22 and catch 27 are in their respective operative positions, an unlocking pull on the tongue 11 locks said bar 22 and catch 27 even more securely in their respective operative positions. The catch 27 is inclined in a direction towards the free end 22a of the bar 22. Hence

any unlocking pressure on the end-face 30 wedges the catch 27 in its operative position.

The force which is exerted by an unlocking pull on tongue 11 is transmitted to bar 22 by the face 53a and the corresponding or abutting end-face of bar 22, if catch 27 tends to turn under said unlocking pull, for any reason. When catch 27 is in operative position, said face 53a preferably abuts said end-face of bar 22. Such transmitted force urges bar 22 to turn inwardly. Such inward turning movement is prevented by stop-pin 21 and notches N. Hence a double safety feature is provided, whereby it is impossible for any unlocking pull to move either the catch 27 or the bar 22 out of their respective operative positions.

The bar 22 can be easily turned outwardly by manual force, thus moving catch 27 out of engagement with tongue 11, even if considerable unlocking pull is exerted on tongue 11.

Hence the device can be opened and closed while leaving one hand of the user free, because the bar 22 can be moved to its operative position by using one hand, and the tongue 11 can then be inserted into the body of the buckle by using one hand.

We have described a preferred embodiment of our invention, but it is clear that numerous changes and omissions and additions can be made without departing from its spirit.

The invention includes the buckle alone, in addition to the entire combination disclosed herein.

The holding means 35 and 35a—40 and 40a are releasable when manual pressure is applied to turn bar 22 outwardly. However, the invention is not limited to any type of holding means.

The invention is not limited to a buckle in which the free end of catch 27 abuts the body of the buckle, when the bar 22 is in operative position.

The scope of the invention is not limited to any particular device for turnably associating catch 27 with locking bar 22.

For example, the invention is not limited to a construction in which bar 22 and catch 27 are mounted on the same pivot pin.

Neither is the invention limited to a construction in which catch 27 makes an acute angle with the base of 19, when the parts are in operative position.

The pin 21 prevents the tilting of the rigid tongue 11, relative to the body of the buckle, when said tongue is in holding position. Otherwise, the tilting of said tongue 11 would force the bar 22 to turn out of operative position, if the device is provided with releasable holding means for bar 22, of the type described herein. The clearance between tongue 11 and fixed pin 21 should be a minimum. In addition, the pin 21 facilitates the quick release of tongue 11 when bar 22 is turned to inoperative position, because tongue 11 cannot then tilt to follow bar 22.

Likewise, the invention is not limited to providing the locking tongue 11 with a perforation or recess intermediate its ends, because catch 27 can engage tongue 11 in any manner.

The catch 27 is in position to hold the tongue 11, as soon as the balls 40 and 40a abut the inner faces of the walls 17 and 18 of the body, and even before said balls 40 and 40a partially enter the perforations 35 and 35a. This is another important safety feature. Hence bar 22 and the catch 27 are in operative position when the balls 40 and 40a abut said inner faces of walls

17 and 18, although said balls 40 and 40a should be in the respective positions shown in Fig. 4, in order to get best results. The friction of balls 40 and 40a against the imperforate portions of the walls 17 and 18, is sufficient to hold bar 22 and catch 27 in operative position.

The convex face 30 is preferably a part of a cylinder whose axis coincides with the axis of rotation of catch 27. This configuration prevents an unlocking pull on tongue 11 from urging catch 27 and bar 22 to move out of operative position, and it also makes it unnecessary to shorten the belt when it is desired to release tongue 11 from the buckle.

Even when the balls 40 and 40a are out of perforations 35 and 35a, an unlocking pull on tongue 11 will not rotate catch 27 and bar 22 out of operative position. When the balls 40 and 40a abut the imperforate parts of walls 17 and 18, and unlocking pull on tongue 11 will rotate bar 22 and catch 27, to turn inwardly towards the base 19.

The invention is not necessarily limited to a relative turntable association between bar 22 and catch 27. The spring 22b is merely one means for causing the bar 22 and catch 27, to turn in unison.

The angle between catch 27 and bar 22, when said elements are in operative position, need not be an acute angle.

The member 12 may be designated as a stop-member, because it limits the insertion of the locking-tongue 11 into the body of the buckle. The invention is not limited to the use of a plurality of springs or other biasing devices, for holding the bar 22 and catch 27 releasably in operative position.

We claim:

1. A buckle device which comprises a channel-shaped body, said body having a channel-base and channel-walls which project forwardly from said channel-base, a stop-member fixed to said channel-base and located between said channel-walls, a pivot-pin which is connected to said channel-walls, said pivot-pin being spaced forwardly from said channel-base, a locking-bar turnably mounted on said pivot-pin, a catch which is also turnably mounted on said pivot-pin, said catch being located rearwardly of said locking-bar when said locking-bar is in operative position, a biasing spring which abuts said locking-bar and said catch and which biases said catch to turn rearwardly away from said locking-bar and towards said channel-base when said locking-bar is in operative position, said catch and said locking-bar having respective stop-walls which abut each other to limit said turning movement of said catch relative to said locking-bar, said locking-bar having lateral walls which can enter said body between said channel-walls, a tube fixed to said lateral walls, a compression spring located in said tube, balls slidably retained in said tube at the respective ends thereof, said compression spring biasing said balls to biased positions in which said balls project partially from the ends of said tube, said channel-walls having perforations, said balls partially entering said perforations and being yieldably held in said perforations when said locking-bar is in its operative position, a stop-pin fixed to said channel-walls and located to stop the movement of said locking-bar rearwardly of its operative position, said stop-walls substantially abutting each other when said locking-bar is in said operative position, and a locking-tongue which has a perfo-

ration, said locking-tongue being insertable into said channel-shaped body into a position in which one end of said locking-tongue abuts said stop-member and the free end of said catch enters said perforation, when said bar is in said operative position, said catch, when said locking bar is in said operative position, being inclined rearwardly towards said stop-member.

2. A buckle which comprises a body which has an opening through which a member can be inserted into said body, a locking bar turnably connected to said body, a catch located at the inner face of said locking bar, said catch being turnably associated with said locking bar, biasing means which abut said locking bar and said catch and which bias said catch to turn away from said locking bar and towards said body when said locking bar is in operative position, and holding means connected to said body and adapted releasably to hold said locking bar in operative position, said catch and said locking bar having cooperating stop means to limit the turning movement of said catch relative to said locking bar under the force of said biasing means, said catch being turnable towards said locking bar, when said locking bar is held by said holding means in operative position, said catch being shaped to engage said inserted member.

3. A buckle which comprises a body, a locking bar turnably connected to said body, a catch located at the inner face of said locking bar, said catch being turnably associated with said locking bar, biasing means which abut said locking bar and said catch and which bias said catch to turn away from said locking bar and towards said body when said locking bar is in operative position, and holding means connected to said body and adapted releasably to hold said locking bar in operative position, said catch and said locking bar having cooperating stop means to limit the turning movement of said catch relative to said locking bar under the force of said biasing means, said catch being turnable towards said locking bar when said locking bar is held by said holding means in operative position, said holding means slipping to release said locking bar when said locking bar is urged to turn away from said body under manual pressure, and stop means adapted to limit the turning movement of said locking bar out of said operative position in a direction towards said body.

4. A buckle which comprises a body which has an opening through which a member can be inserted into said body, a locking bar turnably connected to said body, a catch located at the inner face of said locking bar, said catch being turnably associated with said locking bar, biasing means which abut said locking bar and said catch and which bias said catch to turn away from said locking bar and towards said body when said locking bar is in operative position, and holding means connected to said body and adapted releasably to hold said locking bar in operative position, said catch and said locking bar having cooperating stop means to limit the turning movement of said catch relative to said locking bar under the force of said biasing means, said catch being turnable towards said locking bar when said locking bar is in operative position, the free end of said catch abutting said body and said catch making an acute angle with said locking bar and being inclined towards the free end of said locking bar when said locking

bar is in operative position, said catch being shaped to engage said inserted member.

5. In combination, a belt which has a rigid tongue, said tongue having an engagement portion, a buckle which has a body, a locking bar turnably connected to said body, a catch located at the inner face of said locking bar, said catch being turnably associated with said locking bar, biasing means which abut said locking bar and said catch and which bias said catch to turn away from said locking bar and towards said body when said locking bar is in operative position, said catch engaging said engagement portion of said rigid tongue when said locking bar and said catch are in operative position so as then to prevent the separation of said rigid tongue from said body, and holding means connected to said body and adapted to hold said locking bar in operative position, said body having rigid stop means which prevent said tongue from tilting sufficiently relative to said body to exert unlocking force on said locking bar.

6. In combination, a belt which has a rigid tongue, said tongue having an engagement portion, a buckle which has a body, a locking bar turnably connected to said body, a catch located at the inner face of said bar, said catch making an angle with said bar, said catch and said bar being turnable in unison relative to said body, said catch engaging said engagement portion of said rigid tongue when said locking bar and said catch are in operative position so as then to prevent the separation of said tongue from said body, and holding means connected to said body and adapted releasably to hold said locking bar in operative position, said body having rigid stop means which prevent said tongue from tilting sufficiently relative to said body to exert unlocking force on said locking bar.

7. A buckle which comprises a body which has a base and parallel walls which project from said base, a locking bar turnably connected to said body, and a catch located at the inner face of said locking bar, said catch and said locking bar being turnable in unison relative to said body, said walls having aligned perforations, said bar having spring-biased catches which are located partially to enter said perforations when the locking bar and said catch are in respective final operative positions, said catch then being located to engage a tongue which is located removably in said body, said catch also being located to engage said tongue when said tongue and said locking bar are in advance of said respective final positions and said catches abut imperforate portions of said walls.

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