

PATENT SPECIFICATION

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(54) A COUPLING DEVICE, PRIMARILY FOR SEAT BELTS

(71) We, TAKATA KOUJO Co., LTD., a Japanese Corporation, of No. 10 Mori Building, 1—18—1 Toranomon, Minato-Ku, Tokyo, 105, Japan, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to a coupling device, primarily for seat belts.

According to the invention, there is provided a coupling device, primarily for seat belts, comprising a buckle and a coupling tongue, said coupling tongue having a latching shoulder, and said buckle including: (a) a hollow body member having a front opening through which said coupling tongue is slidable in the direction of coupling, said body member furthermore including opposite fulcrum-forming portions directed, transversely to the direction of coupling, towards each other; (b) a latch member housed in said body member and comprising a knee portion and lower and upper portions diverging from said knee portion towards said front opening of said body member, said latch member lower portion including a shoulder, and said knee portion engaging, whereby to be fulcrummed about, said fulcrum-forming portions of the body member whereby said latch member is pivotable, about an axis transverse to the direction of coupling, between, when the coupling tongue is inserted into the buckle, a latch position with said second-mentioned shoulder engaging said shoulder of the inserted coupling tongue to releasably prevent the withdrawal thereof and an unlatch position with said first-mentioned and second-mentioned shoulders out of registry; and (c) a spring member disposed in said body member and including integral first spring means urging said latch member towards a predetermined latching position, and integral second spring means normally bearing on said coupling tongue when the latter is in a fully-inserted position in the buckle to resiliently urge said coupling tongue towards a retracted position relatively to said body member.

Also, according to the invention, there is

provided a buckle for use in combination with a coupling tongue to form a coupling device primarily for seat belts, said buckle comprising: a channel-sectioned frame having a base provided with a raised forward part for engaging the tongue piece, a latch plate of hook form comprising a knee portion and lower and upper diverging portions diverging from said knee portion, said latch plate upper portion having a pressure-receiving part at its upper end, and said knee portion having opposite ends thereof loosely engaged with, and fulcrumming about, fulcrum-forming portions, of the frame, directed transversely to the direction of coupling, a multifunction spring member in the form of a resilient plate having a plurality of fingers or projections and inserted between the latch plate and the frame so that the latch plate is resiliently urged in a plurality of directions, and a push part for co-operating with said pressure-receiving part, said push part being movable to move the latch part to an unlatched position.

Exemplary embodiments of the present invention are hereinafter described with reference to the accompanying drawings. It should be noted that the present invention is not limited to the specific structures in the accompanying drawings only, but that various design modifications may be made within a range that does not depart from the scope of the present invention as defined in the following claims.

Figure 1 is a fragmentary top plan view of one preferred embodiment of the present invention showing a tongue and buckle in uncoupled condition;

Figure 2 is a medial longitudinal cross sectional view thereof;

Figure 3 is a perspective exploded view thereof;

Figure 4 is a view similar to Figure 2 showing the buckle and tongue in coupled condition;

Figure 5 is a view similar to Figure 4 showing the buckle in an unlocked condition;

Figure 6 is a perspective view of a modified spring member according to a second

preferred embodiment of the present invention;

Figure 7 is a perspective view of the actuating member of said second embodiment; and

Figure 8 is a medial longitudinal sectional view showing the tongue piece of said second embodiment in a released position.

Referring now to the drawings, particularly Figures 1 to 5 thereof which illustrate a preferred embodiment of the present invention, the reference numeral 1 generally designates a tongue piece that can be engaged or disengaged with the buckle body consisting of a frame 2 constituting a hollow body member, a latch plate or member 3, a multi-function spring member 4 formed of a piece of thin resilient metal plate, and an actuator or push plate or member 5. The frame 2 has opposed side walls 7, 7¹ that are directed upwardly from both sides of the base plate 2¹, and the upper surface thereof is further bent inwardly to form inwardly directed flanges 8, 8¹. The frame bottom wall or base plate 2¹ has a front curved border or section 12 that is curved upwardly directed thereby delineating the lower transverse edge of a tongue piece-insertion opening 13 whose upper edge is delineated by the flanges 8, 8¹ and the side edges by side walls 7, 7¹. The flanges 8, 8¹ further have pairs of fingers 10, 10¹, 11, 11¹ on the upper sides of the tongue piece insertion hole 13 as shown, and further have notches 9, 9¹ at the center or a little back of the central position to engage the multi-function spring 4 and to hold the latch plate 3. The parts 10, 10¹, 11, 11¹ serve to engage the push plate 5 and a cover 6 that will be hereinafter described. Although the drawings show these each in pairs, the structure need not be so limited, but may be modified appropriately within the scope of the present invention as defined in the claims hereof. The reference numeral 14 designates a connection opening to which a belt or strap may be fastened and which may have any suitable shape, and can be connected, for example, to the floor or seat of the vehicle by way of a flexible member.

The latch plate 3 is made of a plate which is curved in cross section to form a hook, and has a knee or curved portion 17 that can be resiliently bent to a determined degree when latched to the walls on the tongue piece insertion side of the notches 9, 9¹ of the frame 2, so that the latch plate 3 can be smoothly held. The latch plate 3 has two diverging portions diverging from said knee portion 17 forwardly towards the opening 13 of the body member 2, namely a lower diverging portion having an upwardly projecting tongue piece engaging part 15 having a shoulder facing away from said opening 13, and an upper diverging

portion having upwardly projecting pressure-receiving fingers or parts 16, 16¹. The knee portion 17 engages, whereby to be fulcrummed about, fulcrum-forming portions constituted by the side walls on the tongue piece insertion side of the notches 9, 9¹ in the flanges 8, 8¹ of the frame 2, whereby the latch member 3 is pivotable, about an axis transverse to the direction of coupling, between a latch position and an unlatch position. The lower diverging portion of the latch plate 3 has a spring hole 18 and depending ridges or bead parts 19, 19¹ forming surfaces to receive the pressure of springs 20, 20¹ as will be hereinafter explained, thereby reinforcing the latch plate 3 as shown. The bead parts 19, 19¹ and the pressure receiving parts 16, 16¹ need not be limited to the construction shown in the drawings; the bead parts 19, 19¹ may be formed in any construction if they have the strength and surfaces to which will be applied the pressure of the springs 20, 20¹, and also the pressure receiving parts 16, 16¹ may be formed in any construction if they can receive the pressure imparted thereto by the push plate 5. The multi-function spring 4 is a spring board or unit. The multi-function spring 4 is made of a piece of thin resilient metal plate and is bent in a stepped manner, having on the base or lower side thereof, finger springs 20, 20¹ on both sides to upwardly bias or urge the latch plate 3, and having at the middle part transversely spaced vertical fingers or side walls 22, 22¹ to resiliently support both sides of the spring hole 18 of the latch plate 3 and to permit the smooth introduction of the tongue piece when the tongue piece is being inserted. When the tongue piece is being released from the buckle, the upper edges of the fingers 22, 22¹ can contact the lower face of the tongue piece to facilitate the release. The lower side edges of the multi-function spring member 4, form upper side walls or lips 25, 25¹ to resiliently press the spring member 4 to the side walls 7, 7¹ of the frame 2. Also, on both sides on the upper side of the spring member 4 are formed upwardly inclined finger springs 24, 24¹ that serve to fasten the spring 4 to the notched parts 9, 9¹ of the frame 2. At the vertical wall linking the upper and lower portion of the spring member 4 are formed finger springs 21, 21¹ that bias or always press the latch plate 3 in a direction towards the opening 13, and at the middle part is provided a tongue piece ejecting spring 23 that ejects the tongue piece 1 when a false latch is likely to be developed and when the tongue piece 1 is to be released from the buckle body. By false latching is meant a condition in which the buckle appears to be properly latched but is not, and which occurs when the tongue piece is inserted

with insufficient force. The reference numeral 26 designates the spring member upper part that will be angularly pressed from the upper direction in order that the spring member 4 may be easily inserted between the aforesaid frame base plate 2¹ and the bottom surface of the latch plate 3 when the buckle is being assembled, the reference numerals 27, 27¹ designating holes that serve to ensure the smooth functioning of the tongue piece ejecting spring 23, and the reference numeral 28 designates an opening in the tongue piece ejecting spring 23 and is suited for the passage of the arm of a switch that may be mounted on the buckle.

The push plate 5 engages and follows the upper surface of the latch plate 3 and serves to transmit the selective pressing force to the latch plate by way of the pressure receiving parts 16, 16¹. The push plate 5 has a pushing part 29, and its extended end is curved and rockably engages with the engaging parts 10, 10¹ of the frame 2 by way of its curved lip or support point 30. The reference numeral 6 designates a cover or top wall that overlies the push plate 5 and is connected to the engaging parts 11, 11¹ of the frame 2 by way of its curved engaging part 33, and has a window 32 on its upper surface through which is exposed an accessible pushing part 29. The cover 6 is reliably secured by means of a covering engaging notch 34 that is provided at the end opposite to said curved engaging part 33. The reference numeral 35 is an engaging part of the tongue piece 1, and the numerals 36, 36¹ designate inclined or cam surfaces on the insertion side of the tongue piece.

The lower portion of the latch plate 3 is inserted through the notched parts 9, 9¹ with the pressure receiving parts 16, 16¹ of the latch plate 3 protruding beyond the notched parts 9, 9¹ of the frame 2, and the curved portion 17 of the latch plate 3 is brought into contact with, and supported by the side walls on the tongue piece insertion side of the notches 9, 9¹, and the lower portion of the spring plate 4 is inserted between the frame base plate 2¹ and the overlying lower portion of the latch plate 3 from the side opposite to the tongue piece insertion side, and then the part 26 on the upper part of the spring plate 4 is pressed and inserted. At this time, the engaging springs 24, 24¹ on the upper and on both sides are engaging the notched parts 9, 9¹ of the frame 2, and the biasing springs 20, 20¹ on the lower portion are positioned on the lower side of the bead parts 19, 19¹ of the latch plate 3, whereby the side walls 22, 22¹ of the spring plate are positioned at the spring opening 18 which is located rearwardly of the tongue piece engaging part 15. The pushing or actuating plate 5 is then held by engaging the curved support section

30 with the engaging parts 10, 10¹ of the frame 2, and over the upper part thereof is mounted the cover 6 with its curved engaging part 33 engaging finger part 11 of the frame 2. The cover fastening notch 34 is then engaged with the rear ends of the flanges 8, 8¹ of the frame 2 to thereby complete the assembly of the buckle.

In order to couple the tongue piece 1 to the assembled buckle, the tongue piece is inserted whereby the lower portion of the latch plate 3 is pressed by the spring and the shoulder or engaging part 35 of the tongue piece is engaged by the tongue piece engaging part 15 of the latch plate 3 as shown in Figure 4; the force of the spring is then released and the tongue piece is locked or fastened. The state of incomplete insertion may occasionally happen if the force of inserting the tongue piece 1 is very small or if the insertion of the tongue piece 1 is halted before it is completely inserted. However, with the buckle shown, the incompletely inserted tongue piece will be repelled by the tongue piece ejecting spring 23 that is provided as a part of the multi-function spring member 4 and the aforementioned false latching will never occur. To disengage the tongue piece 1 from the buckle, the pushing part 29, as shown in Figure 5, is pushed to press the pressure receiving parts 16, 16¹ of the latch plate 3 downward. The lower portion of the latch plate is moved against the biasing spring with the curved section 17 of the latch plate 3 as a fulcrum, and the engagement between the tongue piece engaging part 15 and the engaging part 35 of the tongue piece is released, and at the same time, the tongue piece 1 is released immediately by the resilient force of the tongue piece ejecting spring 23 which resiliently bears against the tip of the tongue piece 1.

Referring now to Figure 6 to 8 which show another embodiment of the present invention, the tongue piece ejecting spring element 23 of the first described embodiment is provided at the vertical portion between the upper and the lower portions of the stepped thin spring plate member. In the present embodiment, on the other hand, a pair of tongue piece ejecting springs 23a, 23¹a are provided on the lower side walls 25a, 25¹a of the multi-function spring member 4a. The ejecting springs 23a, 23¹a act to repel the tongue piece in a manner to pick up the cam surfaces 36, 36¹ of the tongue piece 1 as the latch plate 3 is lowered when the tongue piece 1 is being released, and at the same time, the tip of the springs 23a, 23¹a are positioned above the lower surface of the latch plate 3 to hold the latch plate 3 at a lowered position. The same symbols represent the same parts as those of Figure 3. In connection with the modified

multi-function spring member 4a, a spring 31 is formed by cold pressing near the curved support point 30 of the push plate 5a, in order that the push plate 5a is pushed upward even when the latch plate 3 is held in its depressed position. That is, this is a state in which the buckle is being released as shown in Figure 8. The tongue piece or ejecting springs 23a 23¹a prevent the latch plate 3 from rising under the influence of the upwardly pressing springs 20, 20¹ that are positioned beneath the latch plate 3; and the spring 31 upwardly urges the push plate 5 to the window 32 of the cover 6 in relation to the tip of the curved engaging part 33 of the cover 6. Then, as the tongue piece is inserted, the springs 23a 23¹a are spread sideways by the inclined surface 36, 36¹ to permit the passage of the tongue piece, and frees the restriction to the latch plate 3 and the springs 20, 20¹ push up the latch plate 3 so that the tongue piece 1 is engaged by the latch plate 3. Also, when the tongue piece is inserted, the latch plate 3 will have been lowered down and held. Therefore, the force of inserting the tongue piece 1 may be so small as to only spread the springs 23a, 23¹a sideways. Accordingly, the aforementioned false latching never develops, and the tongue piece 1 is coupled. Next, to uncouple the tongue piece 1 from the buckle, the push part 29 is pressed so that the lower surface of the latch plate is lowered down causing the tongue piece to be freed, in the same manner as explained with reference to the first embodiment. The latch plate 3 at this moment, is lowered down and held as mentioned in the foregoing.

The coupling and uncoupling of the tongue piece with the buckle are effected as explained in the foregoing. Hence, the buckle may be fastened to one end of the seat belt and the tongue piece may be fastened to the other end of the belt, in order that the seat belt can be buckled and unbuckled.

As explained above, each of the buckles shown is so constructed as to obviate false latching, and has the spring plate formed of a piece of thin plate, contributing to reduce the number of parts and to simplify the fastening operation. In addition, since the mechanism of engaging and disengaging the tongue piece is based on the latch plate that turns with the curved area as a fulcrum, the lever ratio can be increased in relation to the push plate, enabling one to release the engagement with less pushing force. Moreover, the aforesaid multi-function spring member 4 applies forces to the latch plate in various directions, and in particular, the latch plate is loosely held by the spring which is pressing the latch plate forward, thereby improving touch feeling of inserting

the tongue piece. Both the spring and latch members float in that they are not connected to the buckle frame. Each of the buckles shown reduces the number of parts, enhances simplicity in construction and assembling operation, and provides smooth engaging and disengaging operations, greatly contributing to have passengers fasten the seat belt and to heighten the safety.

While there have been described and illustrated preferred embodiments of the present invention, it is apparent that numerous alterations, omissions and additions may be made without departing from the scope thereof as defined in the following claims.

WHAT WE CLAIM IS:—

1. A coupling device, primarily for seat belts, comprising a buckle and a coupling tongue, said coupling tongue having a latching shoulder, and said buckle including: (a) a hollow body member having a front opening through which said coupling tongue is slidable in the direction of coupling, said body member furthermore including opposite fulcrum-forming portions directed, transversely to the direction of coupling, towards each other; (b) a latch member housed in said body member and comprising a knee portion and lower and upper portion diverging from said knee portion towards said front opening of said body member, said latch member lower portion including a shoulder, and said knee portion engaging, whereby to be fulcrummed about, said fulcrum-forming portions of the body member whereby said latch member is pivotable, about an axis transverse to the direction of coupling, between, when the coupling tongue is inserted into the buckle, a latch position with said second-mentioned shoulder engaging said shoulder of the inserted coupling tongue to releasably prevent the withdrawal thereof and an unlatch position with said first-mentioned and second-mentioned shoulders out of registry; and (c) a spring member disposed in said body member and including integral first spring means urging said latch member towards a predetermined latching position, and integral second spring means normally bearing on said coupling tongue when the latter is in a fully-inserted position in the buckle to resiliently urge said coupling tongue towards a retracted position relatively to said body member.

2. A coupling device as claimed in Claim 1, wherein the said latch member upper portion is operatively engagable by an actuating member which is pivotally mounted on said body member and is manually depressible to move said latch member to its unlatched position.

3. A coupling device as claimed in



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multi-function spring member 4a, a spring 31 is formed by cold pressing near the curved support point 30 of the push plate 5a, in order that the push plate 5a is pushed upward even when the latch plate 3 is held in its depressed position. That is, this is a state in which the buckle is being released as shown in Figure 8. The tongue piece or ejecting springs 23a 23'a prevent the latch plate 3 from rising under the influence of the upwardly pressing springs 20, 20' that are positioned beneath the latch plate 3; and the spring 31 upwardly urges the push plate 5 to the window 32 of the cover 6 in relation to the tip of the curved engaging part 33 of the cover 6. Then, as the tongue piece is inserted, the springs 23a 23'a are spread sideways by the inclined surface 36, 36' to permit the passage of the tongue piece, and frees the restriction to the latch plate 3 and the springs 20, 20' push up the latch plate 3 so that the tongue piece 1 is engaged by the latch plate 3. Also, when the tongue piece is inserted, the latch plate 3 will have been lowered down and held. Therefore, the force of inserting the tongue piece 1 may be so small as to only spread the springs 23a, 23'a sideways. Accordingly, the aforementioned false latching never develops, and the tongue piece 1 is coupled. Next, to uncouple the tongue piece 1 from the buckle, the push part 29 is pressed so that the lower surface of the latch plate is lowered down causing the tongue piece to be freed, in the same manner as explained with reference to the first embodiment. The latch plate 3 at this moment, is lowered down and held as mentioned in the foregoing.

The coupling and uncoupling of the tongue piece with the buckle are effected as explained in the foregoing. Hence, the buckle may be fastened to one end of the seat belt and the tongue piece may be fastened to the other end of the belt, in order that the seat belt can be buckled and unbuckled.

As explained above, each of the buckles shown is so constructed as to obviate false latching, and has the spring plate formed of a piece of thin plate, contributing to reduce the number of parts and to simplify the fastening operation. In addition, since the mechanism of engaging and disengaging the tongue piece is based on the latch plate that turns with the curved area as a fulcrum, the lever ratio can be increased in relation to the push plate, enabling one to release the engagement with less pushing force. Moreover, the aforesaid multi-function spring member 4 applies forces to the latch plate in various directions, and in particular, the latch plate is loosely held by the spring which is pressing the latch plate forward, thereby improving touch feeling of inserting

the tongue piece. Both the spring and latch members float in that they are not connected to the buckle frame. Each of the buckles shown reduces the number of parts, enhances simplicity in construction and assembling operation, and provides smooth engaging and disengaging operations, greatly contributing to have passengers fasten the seat belt and to heighten the safety.

While there have been described and illustrated preferred embodiments of the present invention, it is apparent that numerous alterations, omissions and additions may be made without departing from the scope thereof as defined in the following claims.

WHAT WE CLAIM IS:—

1. A coupling device, primarily for seat belts, comprising a buckle and a coupling tongue, said coupling tongue having a latching shoulder, and said buckle including: (a) a hollow body member having a front opening through which said coupling tongue is slidable in the direction of coupling, said body member furthermore including opposite fulcrum-forming portions directed, transversely to the direction of coupling, towards each other; (b) a latch member housed in said body member and comprising a knee portion and lower and upper portion diverging from said knee portion towards said front opening of said body member, said latch member lower portion including a shoulder, and said knee portion engaging, whereby to be fulcrummed about, said fulcrum-forming portions of the body member whereby said latch member is pivotable, about an axis transverse to the direction of coupling, between, when the coupling tongue is inserted into the buckle, a latch position with said second-mentioned shoulder engaging said shoulder of the inserted coupling tongue to releasably prevent the withdrawal thereof and an unlatch position with said first-mentioned and second-mentioned shoulders out of registry; and (c) a spring member disposed in said body member and including integral first spring means urging said latch member towards a predetermined latching position, and integral second spring means normally bearing on said coupling tongue when the latter is in a fully-inserted position in the buckle to resiliently urge said coupling tongue towards a retracted position relatively to said body member.

2. A coupling device as claimed in Claim 1, wherein the said latch member upper portion is operatively engagable by an actuating member which is pivotally mounted on said body member and is manually depressible to move said latch member to its unlatched position.

3. A coupling device as claimed in 130



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Claim 1 or 2, wherein said latch member is in an unsecured condition in the said body member.

4. A coupling device as claimed in Claim 1 or 2, wherein said spring member is in an unsecured condition in the said body member.

5. A coupling device as claimed in Claim 4, wherein said latch member is in an unsecured condition in said body member.

6. A coupling device as claimed in Claim 5, wherein said body member includes a base wall, and said spring member includes a base wall resting on said body member base wall and disposed intermediate the latter and said latch member.

7. A coupling device as claimed in Claim 6, wherein said latch member lower portion comprises a base wall overlying said spring member base wall and having an opening formed therein and said spring member includes a projecting guide leg slidably engaging said latch member base wall opening whereby to permit said pivotal movement of said latch member but to restrict lateral movement thereof.

8. A coupling device as claimed in any one of Claims 1 to 7, wherein said integral first spring means of said spring member is constituted by a plurality of spring elements, and said integral second spring means of said spring member is constituted by a single spring element.

9. A coupling device as claimed in any one of Claims 1 to 7, wherein said integral first spring means of said spring member, and said integral second spring means of said spring member, are each constituted by a plurality of spring elements.

10. A coupling device as claimed in any one of Claims 1 to 7, wherein the arrangement is such that when the coupling tongue is disengaged from the buckle the latch member is held in an unlatched position, but that said latch member is released, to move to a latching position, by insertion of the coupling tongue into the buckle.

11. A coupling device as claimed in Claim 9, wherein, when the coupling tongue is disengaged from the buckle, the spring elements constituting the integral second spring means of the spring member hold the latch member in an unlatched position, but wherein insertion of the coupling tongue into the buckle causes portions of said tongue to cam against, and move, said spring elements of the second spring means to release the latch member for movement into a latching position.

12. A coupling device as claimed in any one of the preceding claims, wherein said spring member has integral spring means engaging said latch member knee portion to bias said latch member forwardly in a

direction towards said opening in the body member.

13. A coupling device as claimed in any one of Claims 1 to 12, wherein said spring member is assembled to said body member by sliding it into said body member in a direction opposite to the said direction of coupling, and said spring member has integral spring means which at the end of said sliding movement spring into engagement with apertures in said body member to hold the spring member against withdrawal from said body member.

14. A coupling device as claimed in Claim 2, or in any one of the claims 3 to 13 insofar as dependent upon Claim 2, wherein the said body member is provided with a cover overlying, but having an aperture permitting operation of, said actuating member pivotally mounted on said body member.

15. A coupling device as claimed in Claim 1, wherein said body member has a base plate, and a pair of side walls integral with and projecting from said base plate and bent towards each other to form flanges, said flanges being notched to provide notch edge portions which form the said fulcrum-forming portions of the body member, and said flanges having portions forming a fulcrum for an actuating member in the form of a push plate pivotally mounted on said body member and adjacent the said front opening thereof and operatively engageable with the upper diverging portion of the latch member, said flanges also having portions engaged with a cover overlying, but having an aperture permitting operation of, said actuating member, said base plate having at one end a lip projecting towards said flanges and delineating an edge of the aforesaid front opening in the body member, said latch member being a latch plate of a hook-shape in cross-section, and said spring member being in the form of a stepped and resilient plate having a lower portion inserted between said latch plate and said base plate, said lower portion of the spring member having spring tongues, which constitute said first spring means, and projections for exerting lateral pressure, in a direction transverse to the direction of coupling, on said latch plate, an upper portion, of the stepped spring member, spaced from said base plate having spring tongues interlockingly engaging said body member, and an intermediate portion, of the stepped spring member, intermediate the said lower and upper portions of said spring member having a tongue-piece ejecting spring tongue or spring tongues constituting said second spring means, said intermediate portion also having spring tongues pressing against said latch plate to bias the latter



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in a direction towards said front opening in the body member.

- 5 16. A buckle for use in combination with a coupling tongue to form a coupling device primarily for seat belts, said buckle comprising: a channel-sectioned frame having a base provided with a raised forward part for engaging the tongue piece, a latch plate of hook form comprising a knee portion and lower and upper diverging portions diverging from said knee portion, said latch plate upper portion having a pressure-receiving part at its upper end, and said knee portion having opposite ends thereof loosely engaged with and fulcrumming about, fulcrum-forming portions, of the frame, directed transversely to the direction of coupling, a multifunction spring member in the form of a resilient plate having a plurality of fingers or projections and inserted between the latch plate and the frame
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- 15
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so that the latch plate is resiliently urged in a plurality of directions, and a push part for co-operating with said pressure-receiving part, said push part being movable to move the latch plate to an unlatched position.

17. A coupling device constituted by a buckle as claimed in Claim 16, and a coupling tongue for engagement with said buckle.

18. A coupling device, substantially as herein described with reference to Figures 1 to 5 or 6 to 8 of the accompanying drawings.

19. A seat belt provided with a coupling device constructed in accordance with any one of Claims 1 to 15, 17 and 18.

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