Oct. 11, 1932. F. MASHEK 1,881,799

BUCKLE

Filed Dec. 15, 1930

Fig. 1.

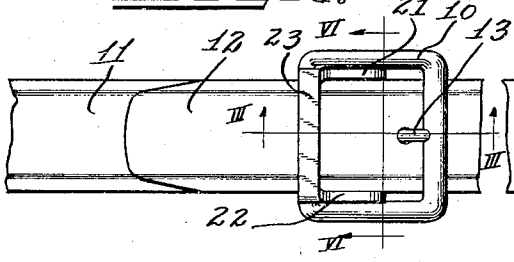


Fig. 2.

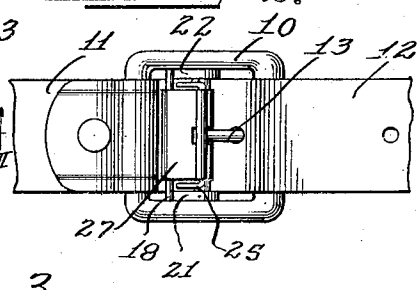


Fig. 3.

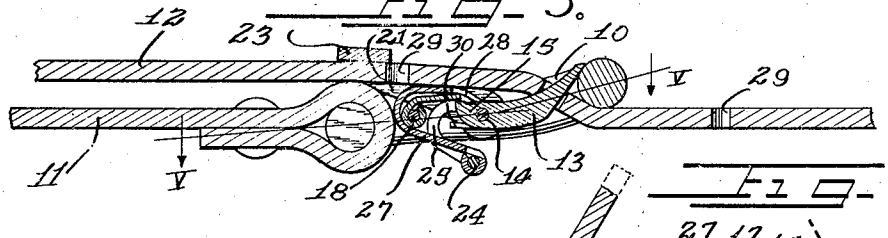


Fig. 7.

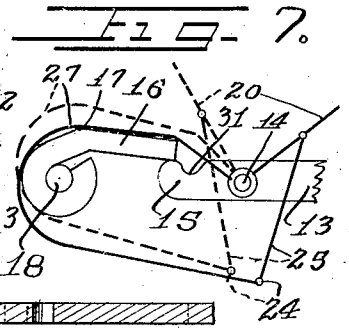


Fig. 4.

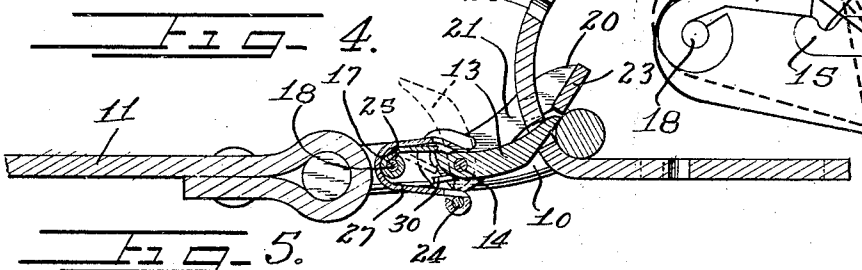


Fig. 5.

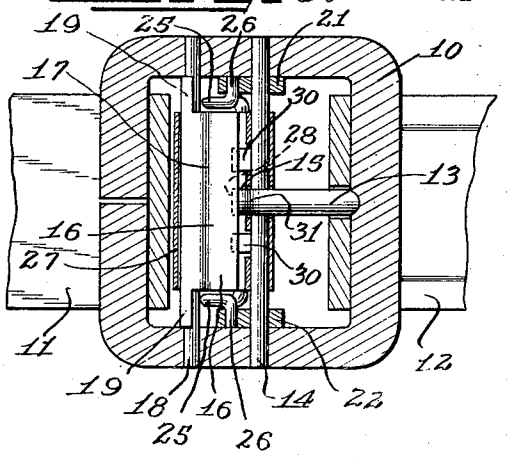
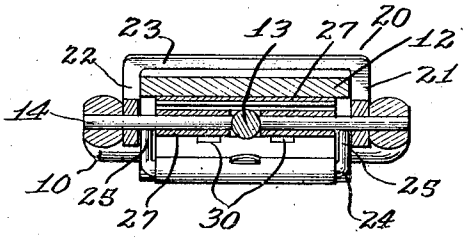


Fig. 6.



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by: Attys.

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UNITED STATES PATENT OFFICE

FRANK MASHEK, OF CHICAGO, ILLINOIS

BUCKLE

Application filed December 15, 1930. Serial No. 502,312.

This invention relates in general to fastening devices or clasps, and more particularly to an improved buckle, of the type disclosed in Sherman Patent No. 1,712,096 issued May 7, 1929, and employing a clamp to anchor the free end of a strap to the buckle frame, and moreover the provision of improved means for engaging the free or detachable end of the strap.

It is an object of my invention to provide an improved buckle including a tongue for embracing the free end of the material associated with the buckle frame, and having means adapted to cause the tongue to automatically assume a position out of engagement with the material and arranged to become ineffective as soon as the tongue is disengaged from the material.

It is another object of my invention to provide an improved buckle including a tongue for embracing the free end of the material associated with the buckle frame, and having means adapted to cause the tongue to automatically assume a position out of engagement with the material and arranged to become ineffective as soon as the tongue is disengaged from the material.

It is another object of my invention to provide an improved buckle including a tongue and movable keeper for embracing the free end of the material connected to the buckle frame, and novel means responsive to the movement of the keeper to a position in which the material connected to the buckle will be released, which is adapted to automatically actuate the tongue to released position and then become ineffective.

It is a further object of my invention to provide an improved buckle including a resiliently urged keeper adapted to be flexed past a dead center position into and out of cooperation with the free end of a strap associated with the buckle frame, and means responsive to the movement of the keeper to a position out of engagement with the strap for causing another strap engaging member to automatically release the strap.

It is a still further object of my invention to provide an improved buckle including a keeper for the free end of the strap associated with the buckle frame, and novel means for urging the keeper into and out of cooperation with the free end of the strap once the keeper has been flexed past a dead-center position.

It is also an object of my invention to provide an improved fastening device adapted to be operated substantially in the manner in which a buckle is manipulated and without requiring any explanation or special movements, and which can be readily unfastened by a single movement, and which does not require the necessity of threading the free end of the strap through a corresponding loop or bail.

In accordance with the general features of the present invention, I provide a buckle comprising a rectangular frame including a cross-bar serving as a pivotal mounting for the tongue and a bail or keeper which is adapted to be flexed past a predetermined dead-center line into and out of operative association with the ends of the strap engaged by the tongue, and a spring and link mechanism arranged in each a manner that it will not only actuate the keeper from its dead-center position into either the effective position of the non-effective position, but will also be bodily shifted in response to the movement of the keeper so as to control the application of its energy to the tongue for automatically causing it to assume an ineffective position relative to the free end of the strap.

Another feature of the invention relates to the novel mounting of the tongue and its associated resilient actuating member, this mounting being such that as soon as the tongue is released it will be automatically moved away from its position of engagement with the strap, and as soon as such movement has transpired, the resilient member becomes ineffective relative to the tongue.

Other objects and advantages of my invention will more fully appear from the following detail description taken in connection with the accompanying drawing, which illustrates one embodiment thereof, and in which:

Figure 1 is a fragmentary plan view of the buckle illustrating the buckle as applied to the ends of a strap, the keeper or bail being

in engagement with the free end of the strap;

Figure 2 is a fragmentary plan view as seen from the back side of the buckle, showing the operative association of the component parts thereof;

Figure 3 is an enlarged fragmentary sectional view showing the relative position of the tongue and keeper when in engagement with the free end of the strap for securing it against movement relative to the buckle, taken substantially on line III—III of Figure 1.

Figure 4 is a fragmentary sectional view similar to Figure 3, showing the tongue in engagement with the free end of the strap and the keeper in its ineffective or open position;

Figure 5 is an enlarged fragmentary sectional view of the buckle showing the arrangement of the component parts thereof taken substantially on line V—V of Figure 3;

Figure 6 is an enlarged transverse sectional view through the buckle and strap, taken substantially on line VI—VI of Figure 1; and

Figure 7 is a diagrammatic view illustrating the relative positions assumed by the component parts of the buckle during operation.

As shown on the drawing:

The reference character 10 designates generally the rectangular frame of a buckle embodying the features of my invention. One end of this buckle frame is secured to one end of a strap 11, the free end 12 of which is adapted to engage the other end of the buckle frame and be removably secured therein by a tongue 13 as shown in Figure 1.

The tongue 13 is pivotally mounted on a bar 14 which extends across the buckle frame and is secured thereto at its ends. Integrally formed with the tongue 13 is a portion 15 which projects outwardly from the bar 14 in a direction opposite to that of the tongue proper for engagement by the free end of a plate member 16. This plate member is deflected downwardly at 17 and formed around a bar 18 to effect a pivotal mounting for the plate; the bar 18 being supported at its ends in the frame 10 so as to extend in a direction parallel to the bar 14. The plate 16 is maintained centrally of the buckle frame by means of end extensions 19 which extend from the lateral edges of the plate to the adjacent inner edges of the buckle frame.

Pivotally connected to the bar 14 is a bail or keeper designated generally by the reference character 20. This bail includes a pair of spaced arms 21 and 22 which are pivotally mounted on the bar 14, the free end of these arms being connected together by a transverse plate or cross-bar 23, adapted, when in the position shown in Figure 3, to engage the free end 12 of the strap. Upon reference to Figure 3, it will be noted that the outer ends of the arms 21 and 22 are curved outwardly and support the cross-bar 23 at an angle relative to the longitudinal center line of each arm extending through its pivotal connection so that sufficient clearance is thereby provided between the bar and the buckle frame to permit the free end 12 of the strap to pass between the bar and buckle frame. In other words, the position of the cross-bar 23 is such that when the keeper is in the effective position the bar will lie flat against the outer surface of the strap. Further, when the keeper is moved to its ineffective position relative to the free end of the strap, in which position the strap is released, the cross-bar 23 will bear against the buckle frame and extend above the frame so that it is easily engaged by one's fingers, thus facilitating the flipping of the keeper to effective position.

Referring to Figure 4, a cross-bar 24 is disposed below the bar 14 and extends between the arms 21 and 22 of the keeper, each end of the bar 24 being similarly bent upwardly and shaped to form a goose-neck curve 25 terminating in an outwardly extending portion 26 which extends into an opening in one of the keeper arms, thereby pivotally connecting the cross-bar 24 to the arms 21 and 22.

A U-shaped member 27 of resilient material is pivotally connected at one end to the bar 24 and extends around the plate member 16 and bar 18, the other end of the member 27 being pivotally connected to the bar 14. The member 27 is slotted as shown at 28 to permit rotation of the tongue 13 to its disengaged position relative to the free end 12 of the strap, and moreover maintains the tongue at a central position on the bar 14.

With the arrangement just described, it will be noted that when the keeper is rotated from effective position as shown in Figure 3 to ineffective position as shown in Figure 4, the keeper will pass through a dead-center position and the member 27 will function to move the keeper with a snap action from the dead-center position into the effective and the non-effective positions.

Further, when the keeper is in its effective position, the member 27 will assume a position relative to the plate 16, as shown in Figure 3, wherein the member will be ineffective to apply pressure thereagainst. When, however, the keeper is moved to its ineffective position, as shown in Figure 4, the member 27 will assume a position wherein it will be in engagement with the plate 16 along the line of bend 17, and since this line of bend is displaced from the pivotal connection of the plate, the pressure due to the member 27 will cause the plate 16 to rotate clockwise. The free end of the plate 16 being in engagement with the portion 15 of the tongue, the tongue will be automatically moved from its posi-

tion of engagement with the free end of the strap, when a pull is exerted upon the strap so as to move the holes 29 therein to the position shown in dotted lines in Figure 4. As soon as the tongue is thus released, it will be forced with a snap action to the position shown in dotted lines in Figure 4. Immediately, however, upon the operation of the tongue the portion 15 thereof is disengaged from the free end of the plate 16 which is then free to move to the position shown in dotted lines, where its movement will be checked by tongues 30 which are integrally formed with the member 27 and project into the path of rotation of the plate. Moreover, as soon as the plate has moved to the position shown in dotted lines, the pressure, due to member 27 will be withdrawn and the tongue freed. The top surface of the portion 15 is provided with a transverse notch 31 to permit the free edge of the plate 16 to move thereover with greater facility.

The above described action of the member 27 and the parts associated therewith will be more clearly understood by reference to Figure 7, wherein the keeper 20 is shown in full lines in its ineffective position and the tongue 13 is shown in its effective position. As thus disposed, the connection between the keeper and the bar 24 lies on the right side of the bar 14 which is the pivotal connection of the keeper. Since the member 27 is under compression, there will be an outward pressure exerted thereby at its connection to the bar 24, but as this bar is constrained against outward movement due to its being connected to the keeper as previously described, it will rotate about its pivotal axis in an anti-clockwise direction. This movement brings pressure to bear upon the line of bend 17 of the plate 16 which forces the free edge thereof against the portion 15 of the tongue 13, thereby moving the portion 15 downwardly and the tongue 13 upwardly. Only a slight movement, however, is necessary before the plate 16 reaches a position out of engagement with the member 27, whereby the actuating force upon the tongue 13 is removed.

Upon moving the keeper to its ineffective position as shown in full lines, it must pass through a dead-center position. Immediately, upon the passage of the keeper through the dead-center position, the connection from the shaft 24 to the keeper will lie on the left side of the shaft 14 and the spring will exert a downward pressure on the keeper and cause it to snap into its effective position. Simultaneously with this action, and since the movement apart of the ends of the spring is constrained by the connection between the keeper and the bar 24, the spring member 27 will rotate about its pivotal axis in a clockwise direction and assume the position shown in dotted lines, wherein the lower arm of the spring engages the pivotal connection of the plate 16. By virtue of this position, the upper arm of the spring is disengaged from the plate 16 and no pressure will be exerted to move tongue 13. It will thus be evident, that, when the keeper is in effective position, the actuating forces are withdrawn from the tongue 13.

The operation of my novel buckle is briefly as follows:

When it is desired to secure the free end of the strap in the buckle, the buckle is adjusted as shown in Figure 4, that is, the keeper is moved to its ineffective position. With the keeper in this position, the free end 12 of the strap is inserted between the tongue 13 and the adjacent end of the buckle frame 10 as shown in Figure 4. The strap is then drawn tightly and the tongue 13 inserted in the desired hole 29 in the strap. The free end of the strap is then flexed to the position shown in Figure 3, wherein it overlies the other end of the buckle frame and the other end of the strap secured thereto. The keeper 20 may then be actuated by grasping the cross-bar 23 and rotating it to its effective position as shown in Figure 3. By virtue of the keeper passing through dead-center position, the member 27 will cause the keeper to snap into its effective position and thus hold the free end of the strap. In this position, it will be noted that the member 27 is disengaged from the plate 16, and that there is no actuating force applied to the tongue 13.

To disengage the free end of the strap from the buckle, it is only necessary for the operator to grasp the free end of the strap and flex it away from the buckle, this action causing the strap to rotate the keeper to its ineffective position as shown in Figure 4. A slight pull is then exerted upon the strap, which will cause it to slide around the frame 10 and rotate the tongue anti-clockwise until it is withdrawn from the hole in the strap through which it projects. As soon as the tongue is thus released, it will be snapped to the position shown in dotted lines by virtue of the downward pressure exerted upon the portion 15, due to the member 27 pushing against the line of bend 17 of the plate 16. Once the tongue has moved to its ineffective position, the actuating forces thereon become ineffective and the plate 16 will rotate about its pivotal connection until its free end strikes against the tongues 30.

My invention, therefore, provides a novel buckle having a tongue which is automatically actuated by spring means to a position out of engagement with the free end of the strap and which spring means is adapted to become ineffective as soon as the tongue is so actuated; which includes novel means responsive to the movement of the keeper to released position for applying actuating force to the tongue and also serving to move the keeper with a

snap action from dead-center position to the effective and non-effective positions relative to the free end of the strap; and which may be actuated by a single movement to release the free end of the strap from the buckle.

Now, I desire it to be understood that, although I have illustrated and described in detail a preferred form of my invention, the invention is not to be thus limited but only insofar as defined by the scope and spirit of the appended claims.

I claim as my invention:

1. As an article of manufacture a buckle comprising a frame, a member connected to said frame for engaging the free end of a material associated with said frame, means to urge said member to a position of disengagement with the free end of said material upon the movement thereof to a position wherein said material is to be removed from said buckle, and means to render said first means ineffective when said member is in a position disengaged from the material.

2. As an article of manufacture, a buckle comprising a frame, a member connected to the frame and arranged to engage the free end of a material associated with the frame, a keeper for the free end of said material, said keeper being connected to the frame and arranged for automatic movement to engaged and disengaged positions relative to the free end of said material, and means including a spring for effecting said movement of the keeper and simultaneously shifting said spring to a position for automatically urging said member out of engagement with the free end of said material.

3. As an article of manufacture, a buckle comprising a frame, a member connected to the frame and arranged to engage the free end of a material associated with the frame, a keeper for the free end of said material, said keeper being connected to the frame and arranged for automatic movement to engaged and disengaged positions relative to the free end of said material, and means including a spring for effecting said movement of the keeper and simultaneously shifting said spring to a position for automatically urging said member out of engagement with the free end of said material, said spring being effective to actuate said member only at such times as the keeper is in disengaged position relative to the free end of said material.

4. As an article of manufacture, a buckle comprising a frame, a tongue connected to the frame for engaging the free end of a material to be secured in the frame, a keeper pivotally connected to said frame, a spring having one end pivotally connected to said frame, a link having its ends connected respectively to said keeper and free end of said spring and disposed relative thereto in such a manner that rotation of the keeper in one direction will cause said spring to rotate in an opposite direction, and means associated with said tongue for engagement by said spring when the spring is rotated in one direction, whereby said tongue will be urged to a disengaged position relative to the free end of said material.

5. In a buckle including a member for engaging the free end of a material, a keeper movable into effective and non-effective relationship with the free end of the material and a frame cooperatively associated with said member and keeper; means responsive to the movement of said keeper to non-effective position for automatically actuating said member to a disengaged position relative to the free end of said material, said means having a connection with said member such that said means become ineffective as soon as said member has been actuated.

6. In a buckle including a fastening member for engaging a free end of a strip, a keeper movable into engaged and disengaged positions with respect to the said end of the strip and a frame cooperatively associated with said member and keeper; means for snapping said keeper past a predetermined dead-center line into engaged and disengaged positions, said means comprising a movably mounted spring having a connection to the keeper such that movement of said keeper in one direction will bodily move the spring to a position wherein tension is applied to said member.

7. A belt buckle comprising a frame, a transverse bar secured at its ends to said frame, a tongue pivoted at one end on said bar, a second transverse bar secured at its ends to said frame and spaced from said first bar, a plate member having one end pivoted on said second bar and its free end in engagement with the pivoted end of said tongue, a U-shaped spring having one end pivoted on said first bar, said plate member and second bar being disposed within the bend of said spring, a keeper pivoted on said first bar, and a link member connecting said keeper and the free end of said spring.

8. As an article of manufacture, a buckle comprising a frame, a tongue connected to said frame for movement to engaged and disengaged positions relative to the free end of a material associated with the frame, a member connected to the frame responsive to the movement of the tongue, and a spring connected to the frame and operatively associated with said member, said spring, tongue and member being of such formation and positioned with respect to each other in such a manner that the tongue is snapped to disengaged position upon the movement of the material to a position for removal from the buckle, and the member and spring are rendered ineffective relative to the tongue.

9. As an article of manufacture, a buckle comprising a frame, a tongue pivotally con-

nected to the frame for movement to engaged and disengaged positions relative to the free end of a material associated with the frame, a member pivoted on said frame, said member being disposed in such a manner as to be rotated by the movement of the tongue, a spring connected to the frame and disposed in such a manner as to be engaged by said member, when the tongue is moved from disengaged to engaged position, said spring and member co-operating to snap the tongue to disengaged position upon the movement of the material to a position for removal from the buckle.

10. As an article of manufacture, a buckle comprising a frame, a tongue pivoted between its ends on said frame for movement such that one end will assume positions of engagement and disengagement relative to the free end of a material associated with the frame, a member pivoted at one end on the frame with its free end in the path of movement of the other end of the tongue, and a spring connected to said frame and disposed in such a manner as to be engaged and disengaged by said member in response to the movement of the tongue to its respective positions of engagement and disengagement, whereby the tongue is freely movable when in its disengaged position.

11. As an article of manufacture, a buckle comprising a frame, a tongue pivoted on said frame for movement to positions of engagement and disengagement relative to the free end of a material associated with the frame, a member pivoted at one end on the frame with its free end in the path of movement of the tongue, said member being moved in one direction by the movement of the tongue to engaged position, a spring connected to said frame, said spring being engageable by said member when it is moved by the tongue, the spring being effective to urge said member in the opposite direction, and stop means to limit the movement of said member in the opposite direction, said means being effective before the tongue is in fully disengaged position.

12. As an article of manufacture, a buckle comprising a frame, a member connected with said frame for engaging the free end of a material associated with the frame, a keeper connected to the frame for movement to engaged and disengaged positions relative to the free end of the material, spring actuated means to urge said member to a position of disengagement with the free end of said material, and a connection between said keeper and spring operative in response to the movements of said keeper to render the spring ineffective relative to said member, when the keeper is in engaged position.

13. As an article of manufacture a buckle comprising a frame, a tongue connected to said frame for engaging the free end of a material associated with the frame, a keeper connected to the frame for movement to engaged and disengaged positions relative to the free end of the material, a member connected to the frame and engaged by said tongue when the tongue is in engaged position, a spring connected to said keeper and movable thereby into and out of engagement with said member, when the keeper is moved to its disengaged and engaged positions, respectively, said spring and member co-operating when the keeper is in its disengaged position to urge the tongue away from its engaged position.

14. As an article of manufacture, a buckle comprising a frame, a tongue pivoted between its ends on said frame for movement such that one end will assume positions of engagement and disengagement relative to the free end of a material associated with the frame, a member pivoted at one end on the frame with its free end bearing against the other end of the tongue, when the tongue is in its engagement position, a keeper connected to the frame for movement to engaged and disengaged positions relative to the free end of the material, and a spring connected between the frame and keeper in such a manner as to be applied to said member in response to the movement of the keeper to disengaged position, the action of said spring being transmitted by said member to said tongue to urge the tongue away from its position of engagement.

15. As an article of manufacture, a buckle comprising a frame, a pivotally mounted tongue carried by said frame for engaging the free end of a material associated with the frame, a keeper pivotally connected to said frame for movement into engaged and disengaged positions relative to the free end of said material, a U-shaped spring to urge said keeper from its dead-center position, one end of said spring being connected to said keeper and the other pivotally connected to said frame, said spring being shifted about its pivotal connection in response to the movement of the keeper, and a member pivoted on said frame having its free end disposed so as to be engaged by the tongue, when the tongue is in its material engaging position, said member being disposed so as to be engaged by the spring during the shifting movement thereof, whereby said spring and member cooperate to urge the tongue from its material engaging position.

In testimony whereof I have hereunto subscribed my name at Chicago, Cook county, Illinois.

FRANK MASHEK.