Aug. 17, 1943. G. J. GILMORE 2,327,102

BUCKLE

Filed June 19, 1942 2 Sheets-Sheet 1

Fig. 1.

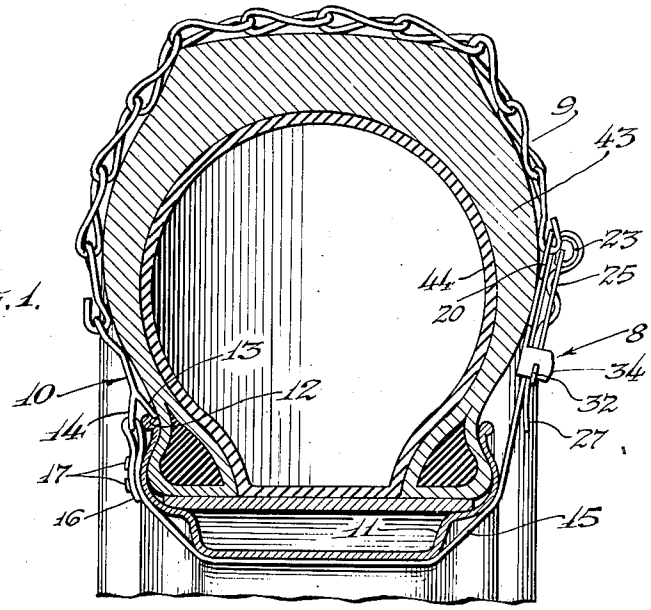


Fig. 5.

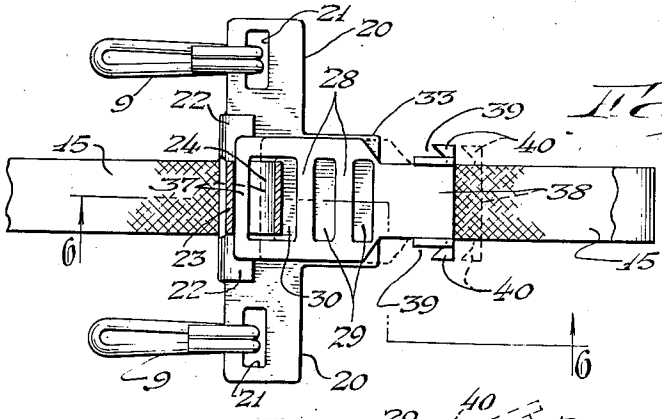


Fig. 6.

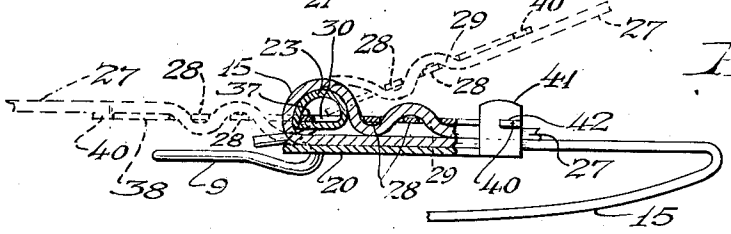
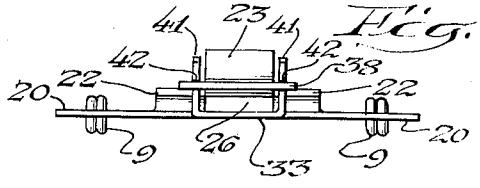


Fig. 7.



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BUCKLE

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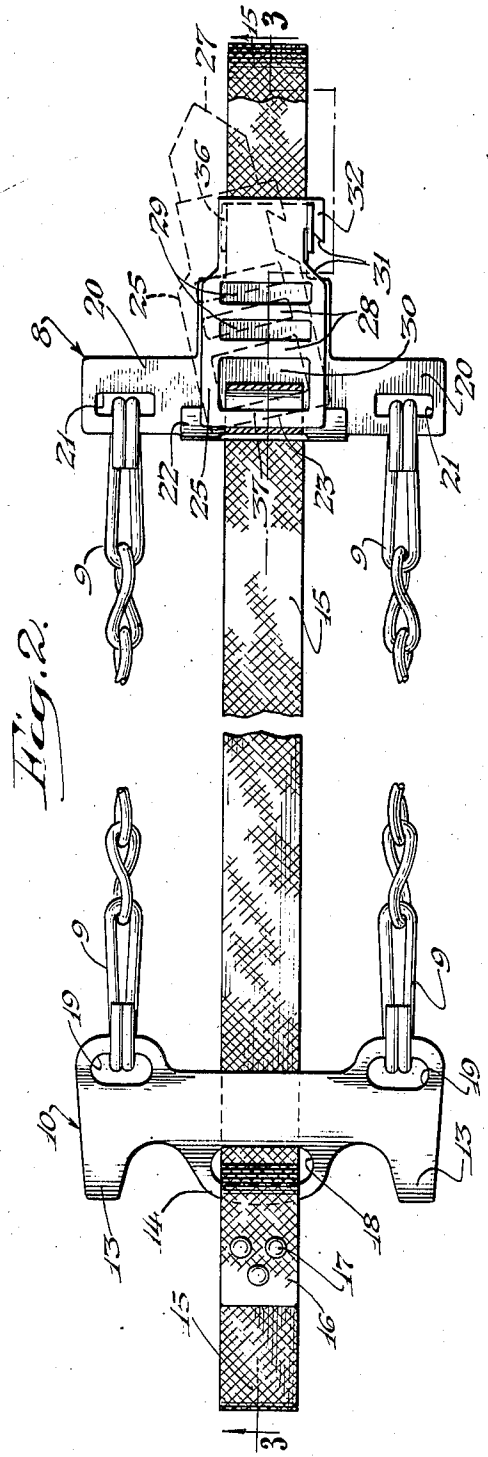


Fig. 2.

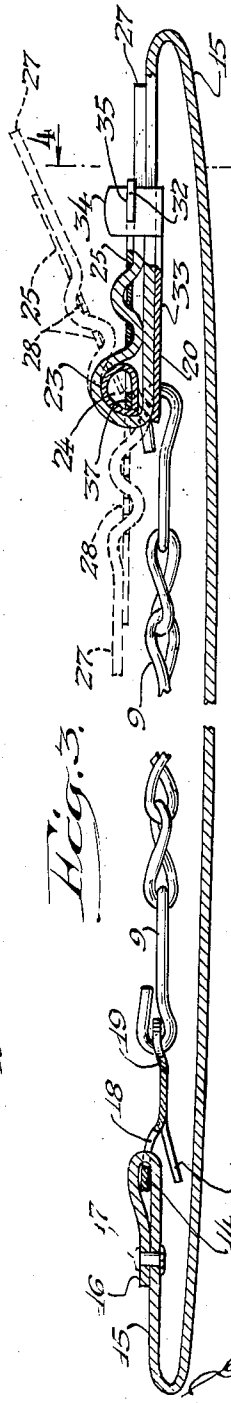


Fig. 3.

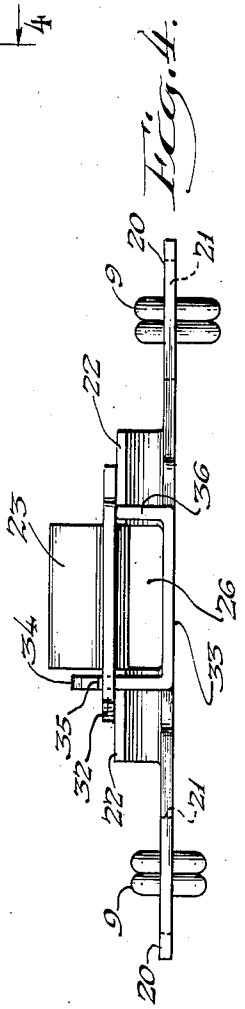


Fig. 4.

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UNITED STATES PATENT OFFICE

2,327,102

BUCKLE

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Application June 19, 1942, Serial No. 447,651

2 Claims. (Cl. 24—193)

This invention relates to tire chain structures having special reference to the buckle structure used in connection with adjustably and tautly tightening the same about a wheel and tire.

One object of my invention is to provide a buckle assembly made of two elements which are secured in a loosely fitting articulate manner in cooperation with a strap member used in connection with the structure, the said strap member being of limited stretch or elasticity, to effectively lock the same by virtue of the limited elasticity resident in the said strap means.

Another object of my invention is to provide an article of the aforementioned character wherein the hasp means permitted oblique movement in addition to and simultaneous with articulation adapting the same to be brought into locked engagement thru an oblique or diagonal movement, as shown by dotted lines in Fig. 2.

Another object of my invention is to provide an article of the aforesaid character wherein the hasp means is articulately secured to buckle means and is provided with loosely fitting articulate means which permits in addition to articulation movement in the direction of the imaginary geometric plane in which the hasp lies, means permitting the hasp means to straddle the buckle means and become removably or releasably engaged thereto.

Another object of my invention is to provide foolproof locking means which will prevent accidental unlocking of the said buckle means and prevent the same from working out of locking engagement after it is once brought to or confined in locked engagement.

Other objects and advantages of my invention will become apparent from a study of the accompanying drawings and the ensuing description wherein like numerals are used to designate like parts, and in which:

Fig. 1 represents a longitudinal cross-sectional view of that portion of a wheel and tire so as to permit clearly depicting the elements comprising my invention and as assembled thereto.

Fig. 2 is a top plan view of one form of my invention and shows in dotted position the operation of the respective elements of buckle means comprising my invention.

Fig. 3 is a view partly in longitudinal cross-section as indicated on the line 3—3 of Figure 2.

Fig. 4 is an end view of the buckle assembly shown in Figure 2 and shows the same with the strap means removed therefrom.

Fig. 5 is a top plan view showing a slightly modified form of my invention.

Fig. 6 is a longitudinal cross-sectional view partially taken on the line 6—6 of Figure 5.

Fig. 7 is an end view of the form shown in Figures 5 and 6 with the strap element removed therefrom.

Referring to the various views, Figure 1 indicates a section of a tire and wheel in which the tire is designated 43, and tube for inflating the tire 44, the wheel rim 11, the extension on the rim 12, and my invention designated, generally 8, the chain elements secured to my invention 9, and the locating element on the opposing side, generally, designated 10, the strap means connecting the elements 10 and 8 being designated 15.

Referring to the views Figures 2, 3, and 4, the non-skid chain structure for which my invention is particularly adaptable is comprised of a rim locating element generally designated 10, a strap means 15 secured thereto, and a lock means, in this instance my invention designated 8. The non-skid structure represented on the drawings is of a more or less present day standard form and is comprised of a chain structure, generally, designated 9 which provides the anti-skid means when applied to an inflated or pneumatic tire, a locating or gauging element, generally, designated 10, a strap means of limited elasticity 15, and the buckle member, in this instance comprises, what I believe I am contributing to this art as a novel structure, which is comprised of such a simplified structure as to require only two elements and performs the function of locking and holding the strap member and the anti-skid arrangement around the tire very firmly, preventing "creep" on the tire or loosening of the same inasmuch as it can be attached rather firmly and securely around a tire and wheel.

The element 10 is comprised of a plate member having two toothed portions 13 in angular relationship with a projecting lug 14, as can be seen in Figure 1; the object of the teeth 13 is to locate firmly against the wheel portion 12 and thus prevent movement of the chain structure when at first it is applied to a wheel. The strap element is secured to the locating plate 10 by securing the same thru the opening 18 and by over-lapping the strap element 15, the end 16 of the strap being riveted as at 17 so as to provide a very secure assembly.

The element 10 is provided with two, preferably, elongated openings 19 to which the chain elements 9 are secured. The free end 27 of the strap element 15 is secured adjustably and tautly by virtue of a locking means such as I provide and which is, generally, designated 8, Figure 2.

It being comprised of a buckle member having two extensions 20 with elongated openings 21 in order to receive the opposite ends of the chain elements 9. The portion 20 is also provided with a bent circular portion 22 which is narrower than the width of the portion 20 and a still further reduced portion 23 which is curved and bent over in order to provide the opening 24, the object of this large opening later to be expounded and elucidated.

The buckle element is provided with a narrow portion 33 emanating from the portion 20, and the same is formed at the outer end into a U shaped structure having a short leg 35 and a higher or longer leg 34. The short leg 35 permits the hasp member 25 to ride thereupon when the same is to be worked into locked engagement as illustrated by dotted lines Figure 2. The hasp member has an enlarged opening 30 and two or more smaller elongated openings or slots 29 leaving the portion 28 to permit the strap to be reeved therethru. The enlarged opening 31 and the portion 37 of the hasp element being narrower than the recess 24 will permit the hasp to receive an articulate motion as well as a diagonal or oblique action as indicated in the dotted lines of Figure 2. The hasp is provided on one side with an oblique opening 31 which permits that opening to straddle the portion 34 and permits the locking point 32 to straddle the slotted opening 35 in the portion 34. The angular structure of the locking point 32 is such that it will confine the hasp in locked position and prevent accidental disturbance of that locked position. The inherent elasticity and spring tension produced as a result of tightening the strap means 15 when the locked element is brought into holding position provides the necessary tension.

The opening 26 is provided below the portion 22 and permits the strap elements to be pulled therethru, the strap element is then pulled tight as far as it can be against the teeth 13 which are lodged in the felly 12 of the wheel. That being done, the end 27 of the strap is laced thru the openings 29 in order to secure the same firmly to the hasp member when in the open position as shown by the dotted lines in Figure 3. Then the assembled structure of the strap end 27 and the hasp 25 is grasped by the fingers and pulled over in the direction shown by the dotted lines Figure 3, to the right, until the hasp member is pushed over as indicated in Figure 2, and allowed to come into locking engagement with the slotted portion 35 in leg 34 of the U shaped extension in the buckle member, riding along on the other leg 36.

In folding over the hasp and the strap as heretofore mentioned, a great deal of added slack is taken up and the strap 15 is placed under tension, to which tension is attributable the maintaining of the hasp in locked engagement. The pointed portion 32 prevents the hasp means from being accidentally dislodged or while the wheel is subjected to motion on the pavement. In order to open the same it is necessary to use some lever or other prying device and place said lever in between the slotted portion 31 and the legs 34 which will permit distending the strap to a sufficient extent to permit lateral or diagonal displacement of the hasp member, and thus permit the same to be unlocked whence the non-skid structure may be removed from the wheel. One or more of these non-skid structures may be applied to a wheel and in adjusting the same tightly thereon, the co-efficient of friction and traction is thereby increased which will provide better travel along pavements when the said pavements may be slippery or otherwise in a condition not suitable to the ordinary pneumatic tire construction.

It is to be noted in Figures 5, 6, and 7 where I show a slightly modified form, that the same structure is utilized namely buckle member having portions 20 and openings 21 therein. This buckle has also an enlarged opening 24 in order to provide slidable motion for the portion 37 of the hasp 25. The hasp is different in this respect that the oblique slotted openings 39 are somewhat larger in order to permit (viewing Figure 5) motion to the right in the plane of the hasp member so as to permit the end portion 38 of the hasp and the locking points 40 to straddle the legs 41 of the U shaped element formed on the buckle member extension 33 and permit them thru the resilient or limited elasticity of the strap 15 to snap the points 42 and the locking portions 40 into locking engagement with the slots 42.

This arrangement or structure differs from the form shown in Figures 2, 3, and 4 only in the operation that the hasp element slides in the same direction or on the same center line as the center line of the strap, whereas in Figures 2, 3, and 4 the hasp element requires an angular movement in order to effect engagement on one side. This hasp member engages on both sides, and the U shaped portion or the terminus of the buckle portion 33 has legs of the same height. It is also provided with an opening 26; the strap is pulled thru the said opening, it is also laced thru the hasp member as in the foregoing outlined structure and is rotated into position permitting the taking up of the added slack and giving a good tight gripping action to the entire unit when thus locked in position.

I believe I have described, rather succinctly, the nature and operation of my invention, and wish to reserve the rights to any and all modifications and improvements which come within the scope and spirit of my invention, and the purview of the foregoing description and the accompanying drawings.

Having thus described and revealed my invention what I claim as new and desire to secure by Letters Patent is:

1. A device of the character described comprising, buckle means provided with an enlarged female hinged portion on one end and a U shaped locking portion on its opposite end, and hasp means provided with a hinge portion on one end cooperating articulately with the hinge portion of said buckle means and adapted to fit loosely therein, being so mounted as to be free to articulate within a range of geometric planes in angular relationship to and including an imaginary vertical plane passing thru the longitudinal axis of said device, the said hasp means further provided with a locking portion on its opposite end adapted to be releasably engaged with the said U shaped locking portion in the said buckle means.

2. In a device of the character described comprised of buckle means and hasp means, locking means comprising, a U shaped portion having legs of uneven length, slotted means in the longer leg portion, and angularly notched means on said hasp means engaging the said slotted means to releasably retain the said hasp means and the said buckle means in locked engagement.

GEORGE J. GILMORE.